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THE ART OF DISPENSING.

[Continued from page 225, Vol. XVII.]

Prescribers and Dispensers.

Questions of Measurements.—Prescriptions are frequently met with in which it is doubtful what size of mixture the prescriber intends. The following is an example:

℞ *Potass. Bromidi.* . ... ℥ *i.*
Syr. Simpl. .... ℥ *i.*
Aquæ. .... ℥ *iv.*
M. ft. Sol.
Sig. One teaspoonful three times a day. DR. BLANK.

Here it is doubtful whether the physician has considered, or whether he knows, that a solid, when dissolved, will occupy a certain amount of space. This varies with almost every solid, but many substances will displace about half their weight of liquid. Does the prescriber wish the above mixture to measure five ounces and four drachms (which would be about its size if dispensed as written) or did he think an ounce-weight of bromide of potasium, when dissolved, would occupy the space of a fluidounce, and that the prescription would measure six ounces when prepared, or did he intend to call for a four-ounce mixture and forget to put the letters '*ad*' (to) after the *aquæ*?

If the mixture is dispensed as it is written, it would measure forty-four drachms and the amount of bromide in each teaspoonful, assuming the teaspoon to hold only sixty minims, would be a little less than eleven grains; if a four-ounce mixture was intended, in each teaspoonful there would be fifteen grains; if five ounces was intended, there would be twelve-grain doses of the salt, and if he thought the finished mixture would measure six ounces, he would expect to get only ten-grain doses of bromide in each teaspoonful. It is often difficult to determine what to do in such a case and the difficulty is not lessened at all when the dispenser remembers that teaspoons which patients take their medicines with are not all uniform in size, and not one of them but holds more than sixty minims or one drachm, which we are taught is the regular medical teaspoonful. It will take only six of the ordinary size teaspoons to measure an ounce, so then the dose of bromide in the different sized mixtures would be twenty grains in a teaspoonful for the four-ounce mixture, sixteen grains for the five-ounce, about fourteen and one-half grains for the five and one-half-ounce, and thirteen and one-third for the six-ounce. Fortunately, it would not be serious, as far as the dose of bromide of potassium in this prescription is concerned, no matter what sized mixture is prepared, as this salt is generally given in much larger doses than any here mentioned, but *the dispenser is always right when he dispenses a prescription exactly as it is written*, as long as he is not sure there has been an error made, or the prescription is not a dangerous one. If it is considered necessary, it would be best to see the physician before the prescription is prepared, but the dispenser should not trouble a prescriber many times to ask about his intentions in a prescription of no great moment, or he will soon be considered a captious fellow. Of course, if there is doubt about an excessive dose of any ingredient of the prescription, it is the pharmacist's duty to consult the prescriber, no matter how coolly he may expect to be received or how little satisfaction be given. As a general thing, it will be found that the intelligent practitioner is better pleased to be consulted as to a possible error on his prescription than to learn that a neglect to do so has injured his patient. In the case of such a prescription as above, the dispenser had better use his own discretion, or, better still, dispense as written than disturb the physician about such a trifling matter.

Practical dispensing requires for its satisfactory and successful prosecution a considerable versatility of talent. Discretion has to be used and judgment exercised by the dispenser; and here is where experience is of great value and enables a man to have a fund of general information which may not often be called into requisition, but yet is essential to smooth working on some particular occasion.

Every day some knowledge is gained which may not be wanted again for months; opportunities are constantly presented of making observations which will be useful at future times; they may not be wanted for months or years; again they may be needed in a few hours, and he who remembers the most of what comes under his personal observation, will gain knowledge that can never be studied from books or taught by the most learned professor. It may not always be the best to go by the bare written instructions; tact and forethought must be used, and the confidence of both the practitioner and his patient will be gained thereby.

Alteration of Prescriptions.—Always keep in mind the rule to make no alteration in a prescription unless you are sure of the writer's sanction. Do not, of course, kill your customer for the sake of the rule. Never dispense a prescription that you fear is a dangerous one; better let it go to some other store, whose proprietor is willing to take risks on his reputation, or consult the physician. If this latter is impossible, and it is imperatively necessary to prepare the prescription (which will happen in some very rare instances) if it is possible to prepare it so it will not be dangerous, do so, but inform the prescriber as soon as possible afterward, that he may sanction your effort. When it is necessary to see the physician, make some excuse to the customer so that the prescription will be left for preparation, to be sent or called for later on. Never let the customer suspect there is anything wrong. The dispenser is the check upon the physician, and it should be the effort of both to protect each other from errors being discovered by customers. No doubt the pharmacist has the most of this to do, and is always more ready to protect the physician than the physician is to protect him; still it is far better for him to do all he can to save the physician from the result of a mistake in writing than to betray him. The question is often asked, is the dispenser justified in effecting the solution or suspension of an ingredient in a mixture which, though prescribed in an insoluble state, is yet to be given in accurate divided doses, as, for instance, when subnitrate of bismuth is prescribed in an aqueous or alcoholic mixture, should the dispenser add a viscous ingredient to suspend it? Of course, a pharmacist may have an understanding with the prescriber, and be granted the privilege of making such a change in the prescription; but unless this has been done, he should under no circumstance add any such material to the other articles. No matter how much he may be convinced that it would be impossible for the patient to measure out fixed portions of the mixture containing equal doses of the bismuth salt, and that he is doing the patient a good turn to make the mixture so thick that the powder will be suspended, and so more evenly distributed in the doses, it will be sure to bring him into trouble, for the physician will want an explanation of why he tampered with his writing to the detriment of his patient's stomach. Besides, it does not follow that the use of a viscous substance will accomplish the object sought, viz., the suspension of the bismuth, for the substance that would most likely suggest itself to the pharmacist's mind—mucilage of acacia or of tragacanth—forms with the bismuth a glutinous, almost indiffusible mass which sinks to the bottom of the bottle, and can only with great difficulty be disturbed.

Should acid be added to quinine mixtures when none have been prescribed? Emphatically, No! If the physician wished the quinine dissolved, he would have ordered the acid. It must be assumed the physician knows something of the medicines he is using, and he probably prefers, for good reasons, to omit the acid. The bitter taste of the salt or alkaloid is more intense when dissolved than when in suspension, and sometimes it agrees better without the acid with certain conditions of the stomach. Acids may be contra-indicated in many instances, as when a woman is nursing an infant, for it is apt to check the secretion of milk. All these things are well known to the physician, but the dispenser is presumably ignorant of them. Do not be hasty in concluding that a *fancied* error is *real*, and do not make the mistake of confounding your individual opinion with the dictates of common sense, as is sometimes done by many pharmacists. However, if the prescription calls for a certain amount of acid not sufficient to dissolve the quinine, the pharmacist is justified in adding enough to dissolve it, assuming the doctor had forgotten the right quantity. This prescription, written by a practitioner in a large city, has been presented to many different stores:

℞ *Ol. Morrhuæ,*
Tr. Gentian. Co.,
Syr. Prun. Virg.,
Mucilag. Acaciæ. . .....ãã ℥ *i.*
M. ft. Mist.
Sig. One teaspoonful three times a day. DR. BLANK.

A large number of pharmacists, when preparing it, have concluded, in their individual opinion, that the physician wished an emulsion, and have effected that result, though changing the proportions of the ingredients somewhat to do so. They were wrong, and very soon heard so from the doctor; for he expected the mixture to separate, and had given directions to the patient to shake it up before using.

Is the substitution of Liq. Acidi Arseniosi justifiable in the following prescription?

℞ *Liq. Potass. Arsenitis* .... ℥ *i.*
Liq. Hydrarg. Perchlor. (*Ph. Brit.*).... ℥ *i.*
Aquæ.....*ad* ℥ *iv.*
M. ft. Mist.

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Fowler's solution, being alkaline, precipitates the mercury, and there is a possibility of the patient getting the whole of it in the last dose.

The same thing may happen when Liq. Potass. Arsenit. and Liq. Strychninæ are mixed together, the alkaloid being precipitated. In both cases the acid solution of arsenic should be dispensed, and a little compound tincture of lavender added.

A note should be made upon the prescription of any change made in it by the dispenser, so that when renewed it may be prepared the same way, and thus be always uniform, that is, always have the same effect, look, taste, and smell. It is important to remember this, for the least change in appearance, odor, or taste in a prescription will at once make a patient nervous, and justly conclude that an error has been made; considerable annoyance will be given to the dispenser which may be avoided by attention to a detail like this.

Soluble substances should always be dissolved before the medicine passes into the patient's hands, when it is possible to do so, and it is well, and may be necessary, to use a little heat to accomplish this object, but this must not be done when there is more of the substance than can be retained in solution at ordinary temperature, for when the liquid cools the surplus quantity will be deposited as crystals on the side of the bottle in a condition in which it will be almost impossible for the patient to take it.

When, therefore, the solid be in excess of the solvent, it must be reduced to the finest possible state of division, and rubbed or shaken up with the liquid, and the direction to shake the bottle be added..

It would be well if physicians would remember the solubility of the solids they prescribe and to order them in the right proportion to the solvent, that they might be retained in solution at ordinary temperature; but as pharmacists cannot regulate this, their duty is to have the mixture in the most permanent condition it can be when it leaves their hands, *i. e.*, as much, and no more, dissolved than it can retain under ordinary keeping.

The dispenser should try, however, to cultivate a feeling of confidence in the physicians with whom he is brought in contact, so as to be able to call their attention to such matters and lead them to prescribe right quantities.

Extra Doses.—In many prescriptions it is difficult to determine whether the dose ordered of certain ingredients is safe or not.

The U. S. P. gives no directions as to the dose of any of the drugs it contains. The committee on the last revision did not care to assume the responsibility of deciding doses, as there is such a large variation in many substances; for instance, iodide of potassium is generally given in doses of from 2 to 10 grains, yet 20 grains is frequently prescribed, and even 1 to 2 drachms, twice or thrice a day, have been borne by some patients; extract of belladonna is given from very small proportions of a grain up to 2 grains, yet it would not be safe to state so in the Pharmacopœia, as it might lead to carelessness on the part of some prescriber or dispenser. If the small dose only were given in the book and a larger one caused the death of a patient, the courts might feel disposed to hold the pharmacist responsible for dispensing it. Two grains of extract cannabis indica have been given every two hours, but its administration was watched by several medical men. Some physicians regularly prescribe teaspoonful doses of subnitrate of bismuth. Ordinary doses of narcotics, in some cases, cause great excitement and very large ones produce a beneficial effect, as, for instance, 10 or 20 grain doses of chloral will make some men most obstreperous, while drachm doses induce sleep. Five ounces of conium juice have been taken daily; pure hyoscyamine has been given in a dose of ½ grain; one drachm of the tincture of Indian hemp has been given three times a day, and one-half pound of mercury has been prescribed for a dose. A physician of this city often prescribes teaspoonful doses of the tincture of digitalis. Sulphate of quinine is often prescribed in heroic doses, and as regards the salts of morphine, opium, and its preparations, it would be difficult to say where the maximum limit ends. These are a few of the prominent things, and it might be possible to go through the whole Pharmacopœia and show that, sometimes, very large quantities of each are used. The German Pharmacopœia gives a table of maximum doses of certain powerful medicines, and if the prescriber wishes to exceed the quantities there set down, he is required to mark the quantity thus (!). Some such rule should be adopted by the physicians of this country, for it is a constantly recurring difficulty to dispensers to know whether certain quantities prescribed are unusual or dangerous doses; whether the result of an error on the part of the prescriber, or intentional. The pharmacist should not be obliged to bear the responsibility of deciding whether excessive doses are safe or not. The Pharmacopœia does not assume to be a guide; prescribers entertain varying ideas respecting the potency of drugs, and, as a rule, especially if eminent in their particular line, are apt to resent the idea that their methods of prescribing should not be familiar to the dispenser.

It is not always wise to ask questions of the patient, for his suspicions will at once be excited and cannot be allayed by anything that afterward may be said, and much annoyance will thereby be caused.

Of course, judgment and tact, in this and all other matters, must be used, and the pharmacist who possesses these in a marked degree will be the most successful.

If the prescriber is known to be in the habit of prescribing large doses and there is a certainty that he understands what he is about, it need not trouble the dispenser very much, but if the prescription is written by a stranger, the dispenser had better have it verified by the physician before he prepares it.

Wishes of Patients.—Patients often ask that changes be made in prescriptions, especially when these have been repeatedly compounded; such as leaving out some article, or reducing or increasing the dose. The dispenser should never accede to such a request without consultation with the physician.

Patients often insist upon being informed of the ingredients in a prescription. This probably is one of the many things that is difficult for a dispenser to refuse to do, as they are often pressing in their inquiries, and it is hard, often impossible, to evade an answer. Most prescriptions are so harmless that it would seem to do no wrong to tell customers without hesitation what they contain, but you never quite know how your information may be taken, or how the prescriber will like it, as he may have an object in keeping his patients in ignorance of what they are taking; therefore, it is always best to refuse to give the desired information. They should politely be referred to the doctor.

General Directions, as a rule, are unsatisfactory, and often lead to mistakes. If the physician does not take the pains, or has forgotten, to write the directions on the prescription, the dispenser should not be blamed if an accident occurs from an excessive dose. Still it is the duty of the pharmacist, if the prescription contains enough of an active remedy to do harm, to endeavor to find out from the patient what directions have been given verbally by the prescriber.

If there have been none given, or if there appears to be a confusion in the customer's mind as to what was directed, or if he is positive of what was told him, and yet the dose is an apparently dangerous one, the pharmacist should refuse to prepare the prescription until after the physician has been consulted.

A very common habit of many pharmacists, when there are no directions on the prescription, is to cover the blank space of their label with the words "Use as directed." It is wholly unnecessary to do this, and often unwise, as it is understood by the patient that the medicine has to be taken as directed by the physician, which probably has been done verbally, or, in some instances, written on a separate piece of paper. In using up the blank space upon the label with these unnecessary words, you prevent the physician or patient from writing on it any direction, title, or designating notes which may be necessary. Complaint is constantly made by physicians as to this practice on the part of pharmacists, and it would be to the dispensers' interest to take note of it and change their practice.

Repetition of Prescriptions.—Up to a recent period, there was no law against the repetition of prescriptions as often as the patient desired, but two years ago a law was passed in New York State forbidding such a practice, in the case of opium and morphine, without the verbal or written order of the prescriber. Of course, while this is a law, it should be obeyed, but it seems to be next to impossible to be enforced, for it would entirely revolutionize a pharmacist's business, and there would be a cry against it, not only from the pharmacists, but also from the patients, that would echo loudly in the legislative halls and very soon cause its repeal. The opposite practice has been of such long duration that but few would care to try to change it. The majority of prescriptions are of such a nature that no harm can happen, no matter how often they are repeated, nor how long the patient takes them. Prescriptions for cough mixtures, or dyspeptic remedies, often are, like heirlooms, considered of great treasure in some families, being handed down from parent to children, loaned as a great favor to neighbors, friends, and acquaintances, and though possibly doing no particular good, yet not working any harm. There are some prescriptions, such as those containing arsenic, digitalis, strychnine, hydrate of chloral, opium, morphine, or other narcotics, which, either from their cumulative tendency or from their liability to engender vices on the part of the patient, may produce serious results if repeated too frequently; and it is in such cases, we believe, not alone in the interest of the patient, but also of the dispenser, that the suggestion be made to consult the physician as to their continuance. If the prescriber takes the trouble to write or designate in any way on the prescription that he does not wish it renewed, the dispenser should heed the request; for, if he should not, he takes upon himself a great responsibility which will some day lead to trouble. Where there are no such designating marks, it is a matter which each pharmacist must decide for himself, but he should always bear in mind that, in this State, if any damage occurs to the patient that can at all be traced to the repetition of the prescription, he will be placed in a defensive position at once, with the certainty that he has been working outside the law, and, in consequence, is a law-breaker.

Prescription Pads are often furnished to physicians with

these words printed on: "This prescription must not be renewed without my consent." This is not binding upon the pharmacist, and does not need to be regarded any more than if they were not there, unless the physician has underscored them, so as to show that he adopts them as his own. If repeating prescriptions should cause the loss of the work of only one physician, pharmacists should hesitate and consider whether what he gains on the price of the repetitions will at all offset what he will lose by antagonizing a good prescriber. There are but a few of the many prescriptions of a store that are repeated more than three or four times, and if the customer is made to understand that the refusal to repeat is not for the purpose of causing them to pay another fee to the physician, but is for their own good, it would not take long for them to become used to the new rule.

Ownership of Prescriptions.—To whom does the prescription belong? is a question that has vexed pharmacists, physicians, and patients many times. The patient considers he has paid a fee to the physician and received for it the prescription which belongs to him, as would anything else he had purchased. The pharmacist claims it as his property; it being an order upon him for certain goods, he should retain it as he does all other orders to show that his work was done correctly. The physician asserts that the prescription cannot in any sense belong to anybody but himself, for, though the patient did pay him a fee, that was not for the piece of paper that contained directions for the preparation of certain drugs, but was for the advice he gave, the skill and care used in diagnosticating the case, and the knowledge he possessed of how to relieve the distress. The prescription was but a general direction to the pharmacist to give certain remedies. Often no prescription is given, yet the fee would be expected just the same, or he might give verbal directions to the pharmacist and the patient thereby would have no prescription at all. It is claimed that if the patient owned the prescription he could have it repeated indefinitely even after it had ceased to be of benefit to his case.

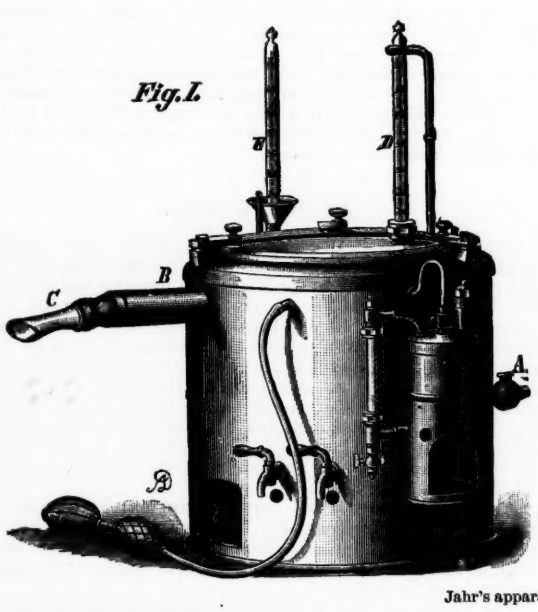
It is probably difficult to determine just who has the best argument in this case; yet the prevailing opinion now is that the customer has the best right to the prescription, that when the physician put his directions or orders on a piece of paper and allowed it to leave his hand he lost all control over it, except as he could use his moral influence on the patient not to have it used more than once. It is the only tangible thing the patient receives for his money, and in consequence he prizes it at its full value. As to using it more than once and being damaged by doing so, that is his own risk, and he is generally willing to take that. Passing out of the customer's hands into that of the pharmacist's, with no stipulation that it shall be returned, it is the custom in this country for the pharmacist to retain it. In some countries there is no need of a stipulation for its return, for the custom is to always return the original, retaining only a copy.

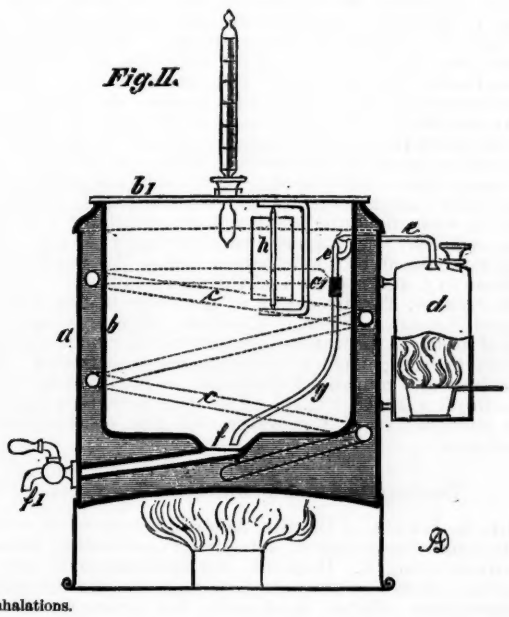
This matter should be dealt with by every pharmacist in the same spirit that governs his whole business. It is very seldom that any trouble arises between the dispenser and customer on this point, and when it does, the dispenser can make up his mind that it is his own fault, and that he has failed to display tact and discretion. It is probably desirable, for the dispenser's safety, for him to retain the original paper, but there is not enough fear or danger of a mistake being charged against him for a pharmacist to be too strenuous in refusing to return the prescription, and if there should be such danger, a copy can be certified to before a notary.

Often customers will ask to have a prescription returned without really wishing it done, prompted to do so by an idle, transitory thought. These can usually be satisfied by a little explanation that it is necessary to keep the paper on file. Others wish to keep all their prescriptions so they may be prepared against the emergency of getting sick again; it is needless to say they invariably visit the physician again every time they are taken sick, and get a new prescription; this class can generally be satisfied with a copy. Others wish to keep the autographs of their physicians, priding themselves on the number they have collected within a period of time. Still others, from pure cussedness, and because they think the pharmacist does not wish them to have the paper, insist upon its return. These two classes will not be satisfied with any excuse the pharmacist may make, and he might as well give up the prescription at first when it is easy to do so than have to do it after an altercation of some minutes' duration, when he will receive no thanks for his action, but probably will have made an enemy of his customer.

Of course, none but the original owner of the prescription has the right to demand it or a copy of it. Often a prescription will be loaned to friends who, finding it efficacious and wishing to continue its use for a length of time, will ask the pharmacist for a copy in order to have it prepared at a nearer pharmacy. This the pharmacist has a perfect right to refuse to do if he wishes, as he is entitled to all the profits coming from its preparation after having it entrusted to him, but if the original owner asks for a copy he should feel obliged to give it to him. Of course, no cast-iron rule should be made in any of these cases; it may seem desirable at times to refuse a copy of a prescription to a customer when asked for, and even take the risk of losing his trade by doing so, as, for instance, a prescription containing an opiate, or an active remedy of any kind which might be hurtful if left in the customer's hand. Again, it may not always be well to refuse a copy to a person who does not own the prescription. Having once received the original prescription or a copy of it, the customor has no right to ask or demand a second copy of it. Yet there is nothing to hinder the parmacist giving as many copies as he is asked for, if he feels so disposed.

(To be continued.)





Jahr's apparatus for inhalations.

A NEW INHALATION APPARATUS.

An improved form of inhalation apparatus has been devised by Dr. Jahr, the secretary of the German Imperial Health Department, with the object of overcoming the defects and drawbacks from which all existing inhalers appear to suffer.

One of the chief defects inherent to the latter is the irrational, or rather neglected, degree of moisture supplied with the warmed current of air to the lungs. From the observations of Valentin, Krieger, Jelinek, and Renk, it follows that there are many conditions when inhaled air, medicated or otherwise, will rather withdraw moisture from the lungs which is carried off by exhalation, than to deposit it there. Without quoting at length the author's theoretical considerations (which may be consulted in the original, published in the *Deutsche Med. Wochenschrift*), we will quote his conclusions. He says:

1. Those substances are most suited for inhalation which are easily vaporized, or those of which a notable portion may be maintained as vapor in the air, at a temperature of about 40° to 50° C. (104° to 122° F.).

2. Notable quantities of remedial agents of the nature just mentioned may be introduced by inhalation even into

diseased portions of lungs having a reduced power of aspiration, provided they are conveyed there by a current of air possessing a temperature above 37° C. (98.6° F.), and completely saturated with steam. For, if such a current of air is inhaled, a portion of the vapor or steam will become condensed in the air-passages, where its tension naturally sinks. Taking into consideration the tension of the vapor employed and the temperature at which it is used, it is possible to calculate the quantity of vapor or of medicament which is intended to be conveyed to the respiratory organs with a given volume of air.

In order to prevent the escape of the medicament from the organs, the best plan is to follow the medicated inhalation by a simple inhalation of air saturated with aqueous vapor, and possessing the temperature of the body, which is not itself capable of carrying off, as vapor, more than a trace of volatile substances. In the case of gases used for inhalation, however, the last-mentioned fact does not obtain; for both dry and steam-saturated air can dissolve the same quantity of gas.

The apparatus here described is based on the principle above outlined, viz., that air fully saturated with steam, and at a temperature above that of the body, deposits a portion of its moisture in the respiratory organs, when inhaled.

Fig. 2 shows the apparatus in section; *a* is a cylindrical boiler into which another, *b*, is so inserted that there is a space of a few centimeters between them. The interval is filled with water, which is heated to the desired temperature by a burner placed below. Between the bottoms and walls of the two boilers a coil of tubing is so inserted that one of its ends projects from the outer boiler at *A* (Fig. 1), and communicates with the air, while the other end, *c* (Fig. 2), opens into the inside boiler *b*. Opposite the orifice *c*, the wall of the outer boiler has a projecting tube, *B* (Fig. 1), likewise of double walls, and a continuation of the water-jacket formed by the two boilers. This is provided with a mouth-piece, by means of which the air, which has been heated and saturated with steam in *b*, is inhaled. The inner boiler is provided with a removable cover.

At the side of the apparatus, a small boiler is attached in which the medicinal volatile substance is vaporized so as to impregnate the air inside of the boiler *b* with it. At the same time a jet of steam, conveyed by the tube *g* from the water-jacket, aspirates the volatile vapor, saturates the air with moisture, and keeps the ventilator *b* in motion, whereby the vapors are thoroughly mixed. The water produced by condensation within the inner boiler collects in *f*, and is drawn off through a faucet.

To resume: The air enters at *A* (where it may first be passed through a filter, if desirable), then traverses the coil of tubing in the water-jacket where it becomes warmed, enters the inner boiler, becomes there saturated with moisture and remedial vapors, and is breathed from the mouth-piece at *C* (Fig. 1). Two thermometers indicate the temperature of the water and that of the interior chamber.

Deodorizing and Disinfecting Iodoform.

Dr. R. Jaksch, of Olmütz, Austria, recommends *creolin* as the most efficient agent, not only for deodorizing, but also for disinfecting it. He points out that numerous authorities have shown iodoform to be devoid of any antiseptic or parasiticidal effects. Kronacher, for instance (*Münch. med. Wochensch.*, 1887, No. 29) showed that it exerts no influence at all upon the streptococcus of erysipelas or upon the bacillus anthracis. He therefore holds that iodoform, before use, should be rendered itself aseptic. Dr. Jaksch has decided in favor of "creolin" for the following reasons. In the first place, it is [reported to be] the best antiseptic known. Esmarch (*Centralbl. f. Bakteriol.*, 1887, Vol. II.) states that it is far more energetic than carbolic acid in its action upon micrococci producing suppuration. Secondly, it is [reported to be] entirely free from any toxic effects. And lastly, only a very small quantity of it is required to deprive iodoform of its penetrating odor, not for a short time, but permanently.—After *Pharm. Post.*

Note by Ed. Am. Drugg.—Unfortunately, creolin is a proprietary article, the exact derivation of which is not exactly known, and for this reason, any reports as to its effects must be taken *cum grano salis*. Fischer has declared it to be a by-product of the carbolic acid manufacture, in which the poisonous, lower-boiling portions have been separated.

Note on Creolin.

In the foregoing paper on "Deodorizing and Disinfecting Iodoform," we had occasion to speak of creolin, pointing out that its exact composition was unknown. The following portions of an abstract printed in the *Therapeutic Gazette* of November may serve as a supplement to the former:

Dr. J. Neudörfer, of Vienna, contributes a paper to the *Med.-Chir. Centralbl.*, No. 28, 1888, on creolin (*London Medical Recorder*, Aug. 20th, 1888). He says that creolin manufacturers have a good reason for not divulging the secret of the chemical composition, in as far as it is a secret hidden from themselves. It is true that creolin does not contain a particle of carbolic acid, the test for which is extremely sensitive; for a solution containing but one two-millionth part of carbolic acid, on being boiled with Millon's reagent (a solution of nitrate of mercury which contains nitrous acid), shows a yellow precipitate, which is dissolved in nitric acid, taking a deep red color. But though there is no carbolic acid in creolin, it would not be safe therefore to conclude that the latter is absolutely non-poisonous, since gas-tar yields many other poisonous substances besides carbolic acid, *e. g.*, aniline, fuchsine, mauvin, safranine, etc. To throw light on this subject, Neudörfer has made experiments on animals. We cannot give the latter in detail, but will give the general results and conclusions which the author arrived at:

1. Intravenous injection of the drug has a poisonous effect.

2. A dose of about 7½ grains for every 2 pounds of body weight, or of 1 C.c. (16 minims) for every 500 C.c. of blood, causes death.

3. Creolin intensely irritates the sensory, motory, and sympathetic nerves, as well as, probably, the nerve centres and ganglia.

But the danger of poisoning must not prevent the use of the drug, which, as an antiseptic, is preferable to carbolic acid, salicylic acid, iodoform, or sublimate. In a concentration of from 1 to 5 per thousand, creolin may be applied to a wound without fear of poisoning, while it does not blunt the feeling of the operator's hands, or the edge of his instruments. It has no disagreeable smell, and there is no danger of poisoning from mistaking the drug. It possesses the following positive virtues: Purulence is dried up by its touch, and it leaves on the bandages merely some yellowish-green serum. It is, therefore, a drug that circumscribes and dries up purulence, a matter of great moment to the surgeon. It further exercises a conserving effect on elements that have been formed, neither dissolving nor wrinkling them; it seems rather to render the intercellular fluid more viscous. To this property, as well as to its action on the vaso-constrictors, it owes its hæmostatic character. Much remains to be discovered as to the details of its action, but, generally speaking, it may be termed an alterative medicine, because of its effect on the sensory, motor, and sympathetic nerves, as well as, probably, the nerve-centres.

Artificial Cocaine.

Prof. C. Liebermann and Dr. F. Giesel have made a most important contribution to our knowledge of the chemistry of cocaine by publishing a method for converting the amorphous secondary alkaloids found in coca leaves into pure, crystallizable cocaine. Liebermann some time ago communicated the results obtained by him in studying the nature of one of these secondary alkaloids (isatropyl-cocaine; see Am. Drugg., 1888, 209), and he then announced that he had succeeded (with Dr. Giesel) in converting the troublesome and hitherto useless secondary alkaloids into pure cocaine. The following is an abstract of the author's paper, published in the *Ber. d. Deutsch. Chem. Ges.*, 1888, 3,196:

As is well known, coca leaves, upon extraction, do not yield at once pure cocaine. The latter is always accompanied by a number of amorphous secondary alkaloids, which have to be separated before pure, crystallized cocaine can be obtained.

The nature of one of these secondary alkaloids has recently been cleared up by one of the authors of the present paper. As a general result of the preliminary studies, it was found that all the amorphous alkaloids, upon being boiled with acids, yielded the base *ecgonine*. The latter is very easily obtained by boiling the alkaloids for about one hour with hydrochloric acid, filtering off the separated acids (benzoic, etc.), evaporating the acid filtrate to dryness, and boiling the dry residue with alcohol, to remove further portions of benzoic or other acids. Pure hydrochlorate of ecgonine is left behind.

The base is set free with soda, and purified by recrystallization from alcohol. Ecgonine thus obtained was found to be absolutely identical with the ecgonine derived from crystallized cocaine.

It now became a question whether ecgonine could not be converted back into cocaine by some simple *practical* process. Between ecgonine and cocaine there is an intermediate base, benzoyl-ecgonine, which consists of ecgonine in combination with the benzoyl nucleus. Heretofore benzoyl-ecgonine had only been obtained either as a companion of cocaine or as a product of decomposition of the latter, but never as a synthetic product. This synthesis has now been accomplished by the authors, and the gap between ecgonine and cocaine thereby bridged over.

The problem was how to cause the benzoyl nucleus to combine with ecgonine. This was easily accomplished by means of anhydrous benzoic acid (benzoic anhydride), as well as by benzoyl chloride. The following method is given by the authors (from their patent, dated Aug. 17th, 1888):

Make a hot saturated solution of ecgonine (one molecule) in about half its weight of water, and digest it at the temperature of the water-bath for about one hour with somewhat more than one mol. of benzoic anhydride added gradually. Then set it aside. It will solidify on cooling

or standing, or while being agitated with ether, which is required to remove the excess of the benzoic anhydride added and the benzoic acid formed. The benzoyl-ecgonine which has been formed, as well as any unaltered ecgonine, are almost insoluble in ether and remain behind. The ethereal solution, upon evaporation, leaves behind all the benzoic acid used in excess. In order to obtain the synthetic benzoyl-ecgonine pure, the residue, after treatment with ether, is triturated with a very small quantity of water, and the liquid portion separated with a filter pump. Benzoyl-ecgonine remains behind, while the much more soluble ecgonine is dissolved out. If care is taken, the yield of benzoyl-ecgonine amounts to about eighty per cent of the weight of the original ecgonine. From the mother-liquids some more benzoyl-ecgonine may be obtained by evaporation. And all the unconverted ecgonine is recovered and added to the next operation.

Benzoyl-ecgonine thus obtained was found to be absolutely identical with that previously known as a decomposition product.

The conversion of benzoyl-ecgonine into cocaine had already been accomplished or at least pointed out some time ago by Einhorn. In 1885, W. Merck found that by heating benzoyl-ecgonine with iodide of methyl and methylic alcohol, in sealed tubes, the former was partly converted into cocaine. But the yield was only about 4 per cent of the amount of benzoyl-ecgonine employed. Einhorn subsequently discovered a much more simple and efficient method for converting benzoyl-ecgonine into ethylic or other compound ethers. Cocaine is, chemically, benzoyl-ecgonine-methylic ester. The method which Einhorn used to produce the ethylic ester was as follows: Make a solution of benzoyl-ecgonine in ethylic alcohol and pass dry hydrochloric acid gas into it, which will cause a considerable rise of temperature for some time. Keep on passing the gas until the liquid has become cold. Then boil it for one hour under an upright condenser, and afterwards evaporate it on a water-bath. Dissolve the residue in water, and precipitate the filtered solution with soda. The precipitate in this case was a base which differed from natural cocaine by containing the ethyl (C_2H_5) nucleus, instead of that of methyl (CH_3) which exists in true cocaine. In order to obtain the latter, it is only necessary (at least this is implied by the statements of Liebermann and Giesel) to substitute pure methylic alcohol for the ethylic, to pass dry hydrochloric acid gas through the solution and to proceed further as just described.

By this method, an extremely pure cocaine is obtained which forms magnificent crystals.

The synthetic cocaine has been tested for its physiological effects by Prof. O. Liebreich, and ascertained by him to be identical with that directly obtained from coca.

Properly speaking, the term "synthetic" cannot be applied to this artificial cocaine, since it is not possible, as yet to build it up from the elements themselves. There is every likelihood, however, that this will be eventually accomplished.

The "Gum Arabic" of the Present Market.

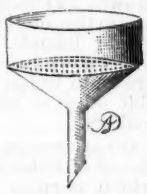
At a recent meeting of the Paris Pharmaceutical Society, Mr. Petit called attention to the numerous and strange varieties of gum now to be found in the market. In appearance they will pass and do sell readily for gum Arabic or gum Senegal, and, indeed, they answer for most purposes. But when the classic tests are applied to them they are quite bewildering. Alcohol, for instance, will not precipitate them when added in the usual proportion, and ferric salts will fail in many cases to produce the characteristic coagulation. Hence assays of preparations containing gum have become liable to suspicion; no analyst would like now to declare for certain that a specimen of gum syrup, for example, does not contain the quantity of gum it should. Gums reaching our markets at present have so strange a chemical behavior that new investigations on the subject are quite necessary. Mr. Marty inquired whether the ferric salt employed as reagent was not acid; it was stated in reply that perfectly neutral ferric chloride had been used, and found often to fail to coagulate solutions containing as much as 10 per cent and more of gum. Mr. Bourguelot added that he had of late examined specimens of gum with the polariscope, and noticed their refractive power was most variable and often quite different from what we were accustomed to find it. Another member suggested there was perhaps some German adulteration at the bottom of all this. But Prof. Bouchardat said the term gum is at best very vague, is applied indifferently to various substances, and nowadays when we buy "gum" we hardly know exactly what we are getting—which sentiment seemed to agree with the general feeling after listening to the discussion.—*Chem. and Drugg.*

Absinthe, which was introduced into Europe by French soldiers after the Algerian war in 1844, is now one of the largest manufactures of European liquor trade, 2,000,000 gallons being made yearly in Neufchatel.

IMPROVED FUNNEL.

On page 105 of our last volume, we described an improved funnel, proposed by Witt, into which perforated plates of glass, porcelain or other material could be introduced, so as to cause the filtering surface to present a greater area than is possible when a folded filter is laid in the funnel.

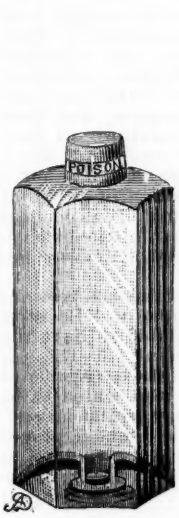
Dr. Hirsch has now introduced an additional improvement, consisting in the sides of the funnel being made straight, and the diameter of the place where the perforated plate is to rest being made larger. These funnels are made of porcelain. We would suggest that they be also made of glass, since it is always preferable to be able to watch the operation of filtration.



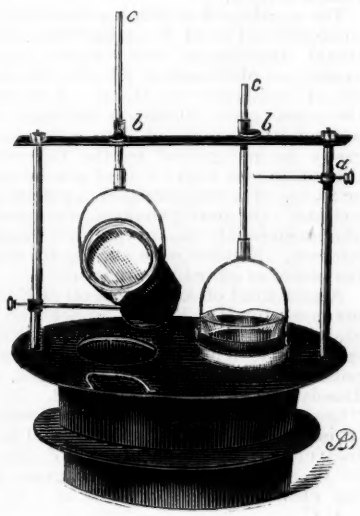
When these funnels are used, a sheet of filtering paper or other suitable material is laid upon the perforated disc so that the interior of the sides is also covered, for which purpose folds will have to be made in the filtering paper. If the vacuum pump is to be used, the filtering paper must be of sufficient strength to withstand the pressure. Additional support may be given to the paper by putting below it a layer of purified cotton or asbestos.

POISON BOTTLE.

The *Chemist and Druggist* describes a bottle invented by Mr. E. S. Hermes, which is intended to be of blue glass with a fluted back. The *special* feature of the bottle is the fact that its top is its bottom—a sort of materialized Irish *bull*, as it were. What resembles the neck of the



Poison bottle.



Support for beakers.

bottle is really a dummy; the opening being in the bottom, as shown in the illustration. It strikes us as quite "English" to invent a bottle with the outlet so situated that in the event of the stopper being loose the contents will readily escape. It is quite evident that the bottle being empty, it will then be impossible for any one to be poisoned by what it doesn't contain.

SWINGS FOR BEAKERS.

When beakers are immersed or placed over a water- or steam-bath, there is no difficulty in wiping their exterior surface rapidly before pouring out the contents, so that the adhering moisture or water cannot contaminate the contents. But when the beakers had been immersed in a glycerin- or oil-bath, the operation of cleaning and wiping the outside is inconvenient and tedious. To remedy this drawback, Max Kaehler has devised a sort of collar and swing, by means of which beakers may be held in such baths, or supported over them. The construction will be understood by examining the cut. As will be seen, the beakers may be raised or lowered by means of rods passing through sockets with set-screws, and may be kept in an oblique condition—for the purpose of allowing the adhering liquid to drain off—by means of the lateral rods *a, a.*—After *Chem. Zeit.*

Syrup of Phosphate of Iron.—A syrup containing less acid than former preparations and less liable to give a precipitate when diluted is suggested by R. Wright: Place in a flask 360 grains of iron wire; 6 fl. oz. syrupy phosphoric acid of s.g. 1.50; and 9 fl. oz. distilled water. Close the flask with a plug of cotton-wool and dissolve the contents with heat. Filter into 72 fl. oz. simple syrup and pass sufficient water through the filter to make the product measure 96 fl. oz.

Notes on Essential Oils.*

Oil of Bay.—The figure for spec. gravity of this oil, given by the U. S. Pharm. as 1.040, has been previously pointed out as incorrect. According to Schimmel & Co., the oil distilled by their New York house has the spec. grav. 0.9806 at 15° C.

Oil of Cananga.—Though ylang-ylang oil is derived from Cananga odorata, yet it is evident that the place of growth and perhaps other conditions greatly influence the properties of the essential oil of this plant. In the Philippine Islands, the oil produced from it possesses the well-known exquisite odor. That distilled from the plant grown in India, on the other hand, has a much less agreeable odor, so much so that it can only be used by soap-makers.

Oil of Orange.—The practical test of distinction between the oil of bitter and that of sweet orange, is the taste, for which purpose a sample of the oil of bitter orange of known purity should be accessible.

Oil of Eucalyptus and Eucalyptol.—It will be remembered that there has been, for some years past, a difference of opinion between Schimmel & Co., of Leipzig, and some English chemists, whether eucalyptol is a constituent of the oil of *Eucalyptus amygdalina* or not. The former denied, and the latter asserted it. It has now been shown by Prof. Wallach, of Bonn, that the said oil, as now found in the market, actually contains eucalyptol. Schimmel & Co. believe that this may be due to the careless collection of the leaves, those of *E. globulus* having been mixed with the other variety. That this happens, is shown by the quoted testimony of an Australian expert. Steps have been taken to procure a supply of genuine leaves of *E. amygdalina*, when the question will, no doubt, be finally settled.

The eucalyptol which was formerly on the market, said to be derived from *E. amygdalina*, was produced by fractional distillation over caustic potassa, and consisted mainly of phellandren ($C_{10}H_{16}$) or eucalypten, and about 20% of eucalyptol ($C_{10}H_{18}O$). A mixture of this kind has the spec. grav. 0.809, is strongly lævogyre, and does *not* solidify when put into a freezing mixture. It may easily be recognized by the following reaction: Mix 1 C.c. of the oil with 2 C.c of glacial acetic acid, and add 1 or 2 C.c. of a concentrated aqueous solution of nitrite of sodium. On gently shaking, the separated oil will congeal almost suddenly to a crystalline magma of nitrite of phellandren. Neither *pure eucalyptol* nor the oil of *Eucalyptus globulus* afford this reaction.

A new kind of Australian oil of Eucalyptus has been announced by Mr. Bosisto under the name of "Bosisto's Standard Test Eucalyptus-Oil." It is stated to have the spec. grav. 0.920 at 10° C., boiling point 175°–178° C., polarization 10 degrees to the right, and to be capable of dissolving 20% of salicylic acid. It is also stated to be "the unadulterated product of fresh Eucalyptus leaves" [it is not said of what species] and to yield, under proper treatment, 70% of eucalyptol of the spec. grav. 0.915 at 10° C., or 52% eucalyptol, spec. grav. 0.930 at 15° C., forming clear, colorless crystals at −14° C., and melting at −1° C.

Eucalyptol.—Schimmel & Co. announce that they have discovered, in the lowest boiling portion of crude oil of camphor, a small proportion of cineol or eucalyptol, amounting to 5 or 6 per cent of the crude oil. Oil of camphor has already furnished other very interesting or important products, the principal among which is saffrol.

Attention is drawn to the fact that the use of ordinary oil of eucalyptus in form of spray, in sick-rooms, is often excessively annoying to the persons who have to breathe this air. It affects many persons in the same manner as wood-spirit does, and it is believed that this is due to the presence of valeraldehyde. If eucalyptol is used instead, however, no such effects are noticed.

Citral and Citronellon.—A preliminary examination of certain essential oils has shown the existence of certain principles to which the discoverers, Schimmel & Co., of Leipzig, have provisionally assigned the above name.

The oil of *Backhousia citriodora*, a close relative to Eucalyptus, contains, as chief constituent, a substance apparently of the nature of an aldehyde or keton, which has an intense odor of lemons. Several other oils having similar odor were then examined, and the same constituent was found in these, though in varying quantity. Thus oil of lemon contained 6 to 8 per cent of it, the oil of citronella fruit about 30%, and oil of lemon grass a large quantity. To this body the name of *citral* has been provisionally assigned, and the attention of chemists has been invited to it, as it seems a promising object of study.

Citronellon is the name for the present given to a keton (or aldehyde) existing in the oil of *Eucalyptus maculata* var. *citriodora*.

Oil of Kesso.—Kesso-root, from *Patrinia scabiosæfolia*, the Japanese representative of valerian, yields an oil which will probably turn out to answer as a substitute for oil of valerian.

Oil of Lavender.—The German government has permitted the use of this oil or of oil of rosemary, in certain proportions, to cover the bad odor of the evil-smelling mixture of wood-naphtha and pyridine bases which are prescribed for denaturalizing alcohol. It is only a question of time when some radical change will have to be made in this method, as the agent for denaturalizing is repulsive in odor and injurious to health, and the aromatics previously mentioned do not fully cover the bad smell.

[The question, how to denaturalize alcohol so that it cannot practically be restored to a condition allowing its use for internal purposes, is a most important one in political economy. Various countries have tried different substances, but the latter are either too disagreeable in odor, or they may, after all, be so far separated as to render the alcohol again fit for consumption. The agent used should have as near a boiling point, and its vapor as near a tension as that of alcohol itself. It should not be precipitated on dilution, and it should impart to the alcohol such a disagreeable taste that no one would use it internally. It would be well if it had an odor, but it is not at all necessary that this should be very prominent. At all events, it should not be nauseating. If such a substance could be found, it would at once smoothen the way, in this country, to freeing alcohol used in the arts from the internal revenue tax; and moreover, it would be very profitable to the discoverer.—ED. AM. DRUGG.]

In view of the conflicting statements regarding the physical properties of oil of lavender, which are likely to be officially defined by the German government, Schimmel & Co. state that absolutely genuine *oil of lavender* [*not* rectified] has spec. grav. 0.895 at 15° C., or 0.890 at 20° C. It is soluble in 8 parts of alcohol of 0.864 (80%) [the rectified oil is soluble in 3 parts of alcohol, sp. gr. 0.895].

On distilling 100 vol. of the crude oil, nothing passed over at 160° C., 6.5 vol. at 185°–190° C., and 78.5 vol. at 190° 250° C.; altogether 85 vol.

It is evident that no official directions regarding qualities or characteristics of essential oils should be promulgated anywhere, without consulting the large manufacturers, who alone have the requisite data necessary to characterize many of these oils, as they are put on the market.

Oil of Cochlearia.—The market contains a spurious oil, consisting of oil of rue mixed with a little oil of mustard.

Oil of Sumbul.—Sumbul root is becoming excessively scarce. In Russia it has ceased to be an article of commerce. It was formerly brought by merchants of Bokhara (Turkestan) to the annual fair at Nishni-Novgorod, but, for some years past, the absence of demand has stopped all supplies.

Oil of Cloves.—In connection with this article, Schimmel & Co. make a statement which will be received with interest. As is well-known, the German empire admits certain dutiable articles duty free, provided they are used, under proper Government control, merely for manufacturing other products, and are thereby, in themselves, rendered unfit for use. Spices belong to this class. Heretofore it has been a common practice with many distillers of essential oils (whether the raw material paid duty, or was manipulated in bond) to dispose of the exhausted material by selling it to those who used it for purposes of adulteration. This seems to have been particularly practised in Hamburg, then situated outside of the customs boundaries. The new regulations, and the absorption of Hamburg within the German custom limits, will make this nefarious practice very unprofitable, and render it almost impossible. If any spices are imported, under bond, for the purpose of distilling off the oil, they must be worked under the control of custom inspectors, and the dregs must afterwards be destroyed in the presence of the same officers.

[*Query:* What do some of our manufacturers do with the fully or partially exhausted dregs of spices or other aromatic articles yielding essential oils? We do not reflect upon the quality of the oils, nor do we want to be understood as believing our best firms to encourage the fraudulent practices of others. But we have been credibly informed that quite an amount of exhausted material has, off and on, been disposed of at private sale, and we only wonder what has become of it.—ED. AM. DRUGG.]

Oil of Patchouli.—Experiments are being made in Paraguay to test the possibility of cultivating the patchouli plant. Since an acre of ground can yield as much as 1 ton per year of the leaves, its cultivation would be quite profitable. [In our judgment, patchouli could be grown to advantage in many localities of Central America.—ED. AM. DRUGG.]

Oil of Tansy.—According to M. H. Peyraud, oil of tansy, when administered to dogs, produces a condition much resembling that of rabies. The same authority has tried the oil as a remedy or preventive of this disease. He made experiments with a number of dogs, all of which received injections impregnated with the poison of rabies. Some of the dogs had previously received injections of oil of tansy. All of those not treated with the latter died, while the others have remained well up to the time of publication of the results (eight months).

Oil of Rosemary.—According to Schimmel & Co., absolutely genuine oil of rosemary [*not* rectified] has the spec.

*Abstracted from "Bericht von Schimmel & Co. in Leipzig." October, 1888.

grav. 1.905 at 15° C. or 0.900 at 20° C. It requires for solution at least 12 parts of alcohol of 0.864; even this shows traces of turbidity. On distilling 100 volumes, 4.5 vol. passed over up to 170° C. and 84 vol. between 170° and 200° C.; that is, altogether, 88.5 vol. at or below 200° C.

Oil of Sandal, West-Indian.—The problem of the botanical source of the West Indian Sandal wood is likely soon to be solved, as a living plant or small tree is on the way to Europe from Venezuela.

Oil of Mustard, essential.—A statement was recently made by Paul Birkenwald (in an inaugural dissertation published at Dorpat), regarding the yield of essential oil from mustard, which shows such excessive figures that Schimmel & Co. felt compelled to announce, on the basis of their twenty-two years' experience of manufacturing the oil on very large scale, that the largest yield obtained by them was—

from Dutch mustard-seed (*Brassica nigra*) ....0.90%.
from Russian mustard-seed (*Sinapis juncea*)...0.52%.

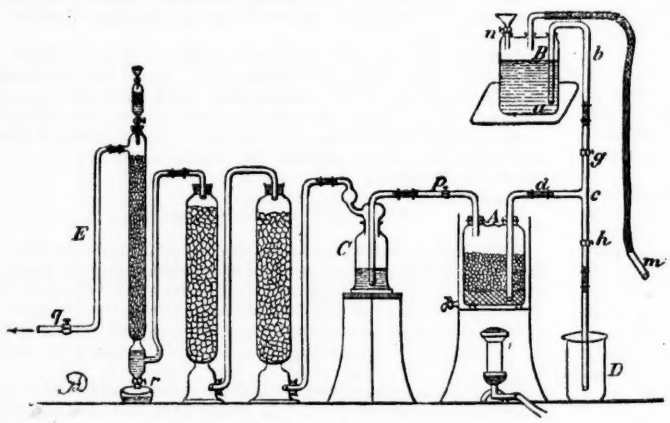
Oil of Ylang-ylang.—The great diversity in grades and prices of oil of ylang-ylang on the market is said to be chiefly due to the fact that some manufacturers collect only the most volatile and exquisitely-odorous portion of the oil, while others extract the oil more or less completely. The latter portions of the distillate are reported to be rather insipid or faintly odorous only. 100 parts of fresh ylang-ylang flowers furnish altogether about 1.2 parts of essential oil. The best manufacturers are said to collect only about half of this.

Menthol.—A *mentholin snuff* has been introduced, which is composed of menthol, sugar of milk, and ground coffee. It is recommended in coryza.

the generator as shown in the cut. At *g* and *h*, stop-cocks are inserted. *C* is a wash-bottle containing sulphuric acid. The connecting tube between this and the flask *A* is likewise provided with a stopcock *p*. The two cylinders following *C* are charged with pieces of chloride of calcium, and the last cylinder with glass-pearls moistened with sulphuric acid. Whenever necessary, fresh acid may be admitted in this cylinder through the funnel-tube above, and the waste acid drawn off below.

To start the apparatus, the stop-cocks *n* and *h* are closed, *g* is opened, and air blown into the tube *m*. This will cause hydrochloric acid to flow from *B* into *A*. When enough has entered, *g* is closed. The water-bath is now warmed to about 50° C. (122° F.), whereupon chlorine will be evolved. The gas passes through the successive wash apparatuses and issues dry and pure. When the operation is to be interrupted, the stop-cock *h* is *first* opened, *p* is then closed, and the warm water drawn off. If there is still development of gas, this will drive the acid contained in the flask *A* over into the receptacle *D*.

Heavy black rubber-tubing is used for all connections. The only joint which is apt to give out soon is at *d*. All connections should be fastened by copper-wire. The corks to be inserted in *A* (and elsewhere) are to be first well soaked in paraffin, and then firmly and deeply inserted. When the apparatus has been emptied of gas, all the stop-cocks are closed to prevent access of air, until it is to be started again.—*Chem. Centralbl.*



Vosmaer's chlorine generator.

Gay Lussac's constant-level apparatus.

CONSTANT LEVEL FOR WATER-BATH.

Gay Lussac's arrangement, on the principle of a "Mariotte's Bottle," for keeping the liquid in a filter at a a constant level, answers equally well for a water-bath or a water-oven, and I have so used it for several years.

The arrangement consists of a bottle, for convenience a "Winchester quart," fitted with a rubber stopper, through which pass three tubes, as shown in the figure. *A* is a long straight tube open at both ends; it passes nearly to the bottom of the vessel. *B* is a bent tube, also open, and terminates below *A*; it is intended to act as a siphon. At *B* it is bent thrice upon itself in order to prevent the heating of the column of water by convection, but when used for a water-oven the double bend is dispensed with. Tube *C* terminates inside the cork, and is opened or closed as necessity requires by means of the caoutchouc tube and glass rod *D*. The bottle is filled through *A* by means of a funnel, the plug *D* being removed whilst filling; when the plug is replaced, any further quantity of water added will run out through B, and when the supply of water through the funnel ceases, it will continue to flow until the level of the liquid in the water-bath *E* is at the same horizontal plane as the bottom of tube *A*. If more water be added directly to the bath, the water will rise in tube *A*; it therefore answers as a gauge of the level in the communicating vessel. —W. H. Symons in *Pharm. Journ.*

CHLORINE GENERATOR.

A. Vosmaer describes an apparatus for generating chlorine which has the advantage that it can be employed for a long time without recharging. The accompanying cut gives a schematic view of the arrangement.

A is the two-necked generating flask standing in a water-bath which can be heated. At the bottom of the flask is a layer of pieces of glass or pumice, and on top of this, a rather high layer (about 1½ kilo—the sizes of the flasks, etc., being adjusted to this) of the best manganese dioxide in small pieces. *B* is a reservoir for hydrochloric acid standing about 18 higher than *A*. This reservoir has 3 necks, one bearing a stoppered funnel, the second a tube *m*, and the third is connected by glass-tubing, *b c d*, with

Maximum Doses of New Remedies.

Dr. B. Fischer gives (*Pharm. Zeitung*) the following maximum doses in grammes:

(To be given with the utmost caution.)

	Single dose.	In 24 hours.
Hydrochlorate of Erythrophlœine	0.01	0.03
Carbolate of Mercury	0.03	0.1
Formamidate of Mercury	0.03	0.1
Peptonate of Mercury	0.03	0.1
Salicylate of Mercury	0.03	0.1
Hydrobromate of Hyoscine	0.001	0.003
Sulphate of Hyoscyamine	0.001	0.003
Nitroglycerin	0.001	0.005
Strophanthin	0.0005	0.003

(To be given with caution.)

	Single dose.	In 24 hours.
Hyperosmic Acid	0.015	0.05
Agaricin	0.015	0.05
Amylene Hydrate	4.0	8.0
Acetanilide (antifebrin)	1.0	3.0
Tannate of Cannabin	1.0	2.0
Cannabinon	0.1	0.3
Hydrochlorate of Cocaine	0.1	0.3
Guajacol	0.1	0.5
Hydroquinon	0.8	1.5
Hypnon	0.5	1.5
Iodol	0.2	1.0
Osmate of Potassium	0.015	0.05
Kairine	1.0	4.0
Methylal	4.0	8.0
Resorcin	3.0	10.0
Sulphate of Sparteine	0.03	0.1
Sulphonal	4.0	8.0
Sulphate of Thalline	0.5	1.5
Tartrate of Thalline	0.5	1.5
Tincture of Strophanthus	1.5 (min.)	5.0

Cough-Medicines.—Dr. H. C. Wood, of Philadelphia, Pa., recommends as a domestic remedy four parts each of Whiskey, Paregoric, and Glycerin, and one part of Chloroform. To be shaken before using, dose a teaspoonful. Another mixture, with citrate of potassium as the active agent, consists of Potassium Citrate, ℥i.; Lemon-juice, f℥iss.; Syrup of Ipecac, f℥ss.; Paregoric, f℥iij. Enough syrup to make f℥iij. The dose is a dessertspoonful, for an adult, every 2 hours.

Paper Pulp in Pharmacy.

FILTER paper, beaten or shaken into a pulp, can be put to a variety of uses. It answers excellently as a dividing agent for oils and resinous substances in the preparation or aromatic waters, syrups, and elixirs. In the cleansing of turbid aqueous, hydro-alcoholic and saccharine liquids its applications are varied and valuable. In the preparation of aromatic waters, the results of its use surpass those obtained from the articles generally used as such, as cotton, magnesium carbonate, precipitated calcium phosphate, talc, "infusorial earth," powdered glass, silica, pumice-stone, kaolin, animal charcoal, etc. To the frequently used magnesium carbonate the objection exists that its solubility is such as to throw out of solution the salts of strychnine, morphine, etc., when dissolved in a liquid made by the intervention of this substance. Cotton neither gives good results nor is easily manipulated. Sugar and alcohol are entirely too prone to cause fermentation in medicated waters. Most of the substancesnamed are seldom pure enough for use, while most fail to give universally good results.

Paper pulp proved to be such a desirable medium in the production of medicated waters that a trial of it in the manufacture of some aromatic syrups and elixirs naturally followed. After its repeated use, I can safely say that in purity of product, beauty of appearance, and exquisite flavor, its results are unequalled.

All torn filters, filter trimmings, and scraps of clean filter paper are saved, so that it is seldom necessary to employ entire sheets. For the vast majority of preparations ordinary filter paper will answer excellently. If an exceptional purity be required, chemically pure paper can be employed. Ordinary filter paper is often contaminated by iron, which can be removed by washing the paper first in a dilute nitro-hydrochloric acid, and then with water, until free from acid.

Paper-pulp was first employed in the manufacture of medicated waters by James Ruan.* He used 60 grains of paper and 30 minims of oil to make 2 pints of water. My experience has led to the use of 90 grains. The appended formulæ include such as have, in my experience, proven practical:—

For Anise, Caraway, Cinnamon, Fennel, Peppermint, or Spearmint water.—Take of the oil 30 minims; of filter paper 90 grains, and water to make 2 pints. Tear the paper into small pieces, put it into a quart bottle, and drop the oil thereon. Add in small portions 2 pints of water, shaking thoroughly after each addition until the paper is disintegrated. Filter, pouring back the first filtrate. When the liquid ceases to drop, carefully remove the pulp from the filter, press out the remaining liquid into the funnel again, and pour sufficient water on the filter to make 2 pints.

Camphor Water.—Take of—

Camphor	120 grains.
Alcohol	½ fluid ounce.
Filter paper	90 grains.
Water to make	2 pints.

Dissolve the camphor in the alcohol, pour the solution upon the shredded paper contained in a wide dish, and stir it about until the alcohol has nearly all evaporated. Then place the paper into a bottle and proceed precisely as directed above for the other aromatic waters.

To Clear Muddy Water.—In obtaining beautifully clear water for ordinary pharmacal purposes from the horribly muddy water sometimes furnished to the St. Louis consumers, the use of paper-pulp gives eminently satisfactory results.

Shake about 1 ounce of filter paper into a fine pulp, in a bottle, by the gradual adding of ½ a gallon of water. Pour this at once in a plaited filter in a large funnel, and keep it constantly filled by fresh portions of the water. This "bed" will filter many gallons of water as clear as crystal, it matters not how muddy originally.

To filter a liquid having a finely-divided precipitate in a state of suspension, treat it just as directed for muddy water.

To Clarify Turbid Honey or Simple Syrup.—Beat 1 ounce of filter paper for each gallon of material into a pulp in a mortar, using a few ounces of water for the purpose; mix it gradually and thoroughly with the honey or syrup, and heat rapidly to the boiling point. When it has partially cooled, strain through a thick flannel cloth.

For simple syrup, the paper should be the white variety, as the boiling temperature, in connection with the use of gray paper, is liable to give the syrup a yellowish tinge.

Syrup of Tolu.—Take of:

Tincture of tolu	2 fluidounces.
Sugar	28 avoirdupois ounces.
Filter paper	180 grains.
Water	to make 2 pints.

Pour the tincture of tolu on the paper contained in a bottle, add 2 ounces of the sugar, and shake them together. Gradually add 1 pint of water, shaking well after each addition. Shake the bottle at short intervals during two hours, and then filter. When the liquid ceases to drop, carefully remove the pulp from the filter and press the excess of liquid into the funnel again. Add the sugar, and dissolve by agitation, without the application of heat. Strain through flannel, and pour sufficient water on the strainer to make the syrup measure 2 pints.

Syrup of Ginger.—Take of:

Fluid extract of ginger	1 fluidounce.
Sugar	30 avoirdupois ounces.
Filter paper	120 grains.
Water	to make 2 pints.

Make this syrup according to the directions given for syrup of tolu.

Syrup of Orange.—Take of:

Sweet orange peel (freed from the inner white portion)	2½ avoirdupois ounces.
Alcohol	5 fluidounces.
Sugar	28 avoirdupois ounces.
Filter paper	180 grains.
Water	to make 2 pints.

Macerate the orange peel in alcohol during four days; then press out the liquid and pour it into a bottle, on the paper, and continue, as in the preparation of syrup of tolu.

Compound Syrup of Squill.—To prepare this syrup follow the directions of the Pharmacopœia, except that instead of rubbing the liquid with precipitated phosphate of calcium, it is shaken up with 180 grains of filter paper, and filtered therefrom.

Elixirs, Simple or Compound.—In making any elixir, reserve two ounces of water from each pint of elixir with which to form a pulp of 60 grains of filter paper (60 grains to each pint). Add the elixir slowly, and with vigorous shaking, to the pulp mixture contained in a bottle sufficiently large to hold the entire amount. Allow it to stand for two or three days before filtering, shaking it often in the mean time.

For an elixir of salicylic acid, salicylate of sodium, or any other salicylate, the filter paper must be absolutely free from iron, or the preparation will soon become discolored. For these, chemically pure paper, or ordinary paper freed from traces of iron by means of diluted nitro-hydrochloric acid, should be used.—JOHN C. FALK in *Western Druggist.*

* *Amer. Jour. Pharm.*, 1874.

Alkaloids in Cod-Liver Oil.

ARMAND GAUTIER and L. Mourgnes announce the discovery, in cod-liver oil, of several alkaloids, some of them of great activity, which appear to belong to the class of leucomaines, a class of alkaloidal bodies which are constantly being formed in the animal organism and which the latter is constantly endeavoring to get rid of through the secretions.

The authors examined both the colored and the bleached varieties of cod-liver oil, but they extracted the alkaloids which they studied from the bleached, as this is generally regarded the most active, and it seemed to the authors desirable to ascertain the cause of this activity.

The particular oils used by the authors were obtained directly from Newfoundland and Norway. The authors account for the presence of alkaloids in the oil in the following manner:

It is known that the fish caught under the name of cod, comprise the great cod (*Gadus morrhua*), the dorsh (*Gadus callarias*), and the small cod (*G. carbonarius*); also to a slight extent, along the coasts and bays, the *Gadus pollachius* and *G. molva*. Their livers, after being washed and placed in vats, exude spontaneously a pale yellow or pale greenish oil, which by a species of fermentation or self-digestion (not putrefaction) becomes acid, and being in contact with the hepatic cells, becomes charged with biliary matters and acquires a yellow color. At the same time also, certain alkaloids are dissolved by the oil, for that portion of the natural white or greenish oil which had previously exuded, contains none of these alkaloids, or but traces of them.

Extraction of the Alkaloids.—The process finally used by the authors is the following:

Treat 100 kilos of pale yellow cod-liver oil, with its own volume of alcohol (of 33 per cent), containing 4 Gm. of oxalic acid per liter. This treatment must be thorough. The alcoholic solution is then separated, almost exactly neutralized with chalk, filtered, and the filtrate freed from alcohol in a vacuum apparatus at a temperature of 45° C. The residue remains liquid. It is digested with precipitated carbonate of calcium, and the liquid lastly fully neutralized by a little lime-water. The whole is evaporated to dryness in the vacuum apparatus, and the residue taken up by alcohol (90%). The alcoholic solution is distilled in a vacuum, the residue taken up by a little water, supersaturated with potassa, and then shaken with a large quantity of ether, which takes up the alkaloids. These are afterwards precipitated by adding oxalic acid to the ethereal solution. From 100 kilos of cod-liver oil, between 52 and 65 Gm. of oxalates of alkaloids were obtained.

The above method removes nearly the whole of the alkaloids from the oil. On dissolving the oxalates of the latter in water and adding potassa, a brown, thick oil is obtained, of a strongly alkaline character. The yield may be stated as between 0.35 and 0.50 Gm. of dry alkaloids per kilogramme of cod-liver oil.

An examination of these alkaloids shows that they consist of volatile bases and of others which are scarcely or not at all volatile. The authors classify these bases as follows:

1. Fraction boiling between 87° and 90° C. (butylamine).
2. Fraction boiling between 96° and 98° C. (amylamine).
3. Fraction boiling a little below 100° C. (hexylanine).
4. Fraction boiling between 198° and 200° C. (hydrotoluidine; a *new* base).
5. Fraction of fixed bases yielding a hydrochlorate which is immediately precipitated in the cold (aselline; a *new* base).
6. Fraction of fixed bases, yielding a rather soluble chloroplatinate, crystallizing out from the mother-water of the preceding (morrhuine; a *new* base).

In addition to these bases, the authors found in cod-liver oil a little lecithine and a nitrogenized crystallizable acid, to which they have given the name *gaduinic acid*. Further reports on all the above substances are promised.—*Journ. de Pharm. et Chim.*, Oct., 1888.

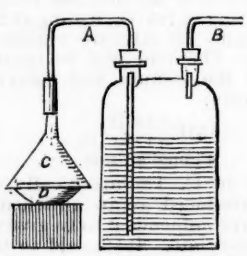
A NEW FORM OF SULPHUROUS ACID APPARATUS.

A. WOULFF's bottle, having two necks, is provided with two bent glass tubes, *A* and *B*, fitted in with corks in the usual manner. The tube *A* reaches nearly to the bottom of the bottle, the other end being attached by a short piece of india-rubber tubing to an inverted glass funnel *C*. Beneath this latter, and resting on a wood block or ring of a retort stand is a small iron dish *D*, whose diameter allows about the eighth of an inch of air space.

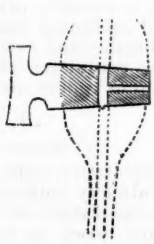
To set the apparatus in action, the bottle is two-thirds filled with water and the tubes are replaced. Fragments of sulphur are now put in the dish, lighted, and placed under the funnel, and the tube *B* connected with a filter-pump, which is put in action. By this means the SO_2 evolved is readily drawn into the water and dissolved. This method takes less time, and there is also less risk of breakage of apparatus than by that usually followed, *i. e.*, by the decomposition of sulphuric acid, a process not altogether free from danger to the operator.—E. RATTENBURY HODGES in *Chem. News.*

IMPROVEMENT IN THE TAPS OF SEPARATING FUNNELS.

IN small separatory funnels, the diameter of the tube below the tap is often so small that a column of aqueous liquid is tenaciously retained in it, but when ether passes the tap, its cohesive force is so small that the column breaks and carries with it a portion of the ethereal liquid which it may be desired to retain. If, however, a groove *G* be filed in the plug at right angles to the "way" *W*, air is admitted to the tube below whenever the tap is shut, and so any liquid it may contain runs out. The use of the tap is in other respects in no ways interfered with, provided it is always turned off in the right direction.—W. H. SYMONS in *Pharm. Journ.*, Sept. 15th.



Hodges' sulphurous acid apparatns.



Symons' improved tap.

Strophanthus Seed.

THE Pharmacopœia Committee of the German Pharm. Association proposes the following description for Strophanthus seed for the next pharmacopœia.

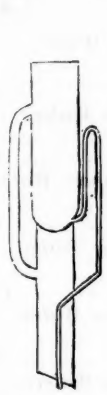
"Probably derived from *Strophanthus hispidus* D. C. and *Strophanthus Kombe* Oliver. The seeds are light, flat and lanceolate, up to 5 millimeters broad, and up to and over 15 mm. long, coated with simple, soft, whitish, yellowish, or greenish, sometimes also brownish-shining hairs, pointed at the upper end, and provided with a comose appendage. After soaking in water, the hairy seed coat, having a transparent structure permeated by very fine spiral vessels, may be stripped off. The pure-white kernel bears at its point the short radicle; the two flatly adherent, reticulated cotyledons are contained, together with the radicle, within the easily detachable endosperm. In the brownish, 10-per-cent decoction of the seed, after it has become cold, neither a precipitate nor a change of color is produced by volumetric solution of iodine, or by a solution of 0.332 Gm. of potassium iodide and 0.454 Gm. of mercuric iodide in 100 Gm. of water, or by solution of ferric chloride.—*Arch. d. Pharm.*

EXTRACTION APPARATUS.

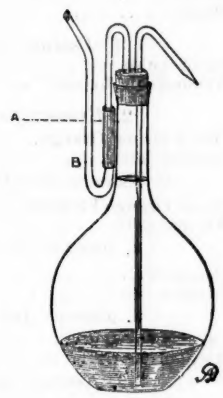
SEVERAL new forms of extraction apparatus have recently been added to the large number already introduced. One proposed by Br. Alander (*Chem. Zeit.*, 1888, 894) is shown in the accompanying cut. This has an exit-tube, which is bent up at the side high enough to cause the solid material in the extractor to be always below the level of the extracting liquid, and only the excess of it flows off into the receiving vessel. A siphoning off can only take place if the apparatus is inclined.

AN IMPROVED WASH-BOTTLE.

GEORGE W. SLATTER recently sent a communication to the *Chemical News* (1888, p. 171) in which he describes an improvement in wash-bottles, consisting in having the blowing tube, outside of the bottle, made of two parts, joined together by means of a piece of rubber tubing, which lies flat against the neck of the flask. When blowing a jet of water, the thumb of one hand is placed upon the rubber-joint, and the moment that the blowing is interrupted, the tube is compressed, thus maintaining a pressure inside of the flask for some time.



Alander's extraction apparatus.



Slatter's wash-bottle.

Solubility of Paraffin, Vaseline, etc., in Various Solvents.

B. PAWLEWSKI and J. Filemonowicz have determined the solubility of paraffin and other petroleum products or constituents in various solvents, and have also found a method for separating paraffin from the other bodies.

The table of solubilities given below is based upon the results obtained with an ozokerite-paraffin, having a melting point of 64–65° C., a congealing point of 61–63° C., and a specific gravity of 0.9170.

Solvent (at 20° C. = 68° F.).	1 part of Paraffin requires of the Solvent....parts.
Carbon Disulphide	7.6
Benzin, boil. up to 75° C. (sp. gr. 0.7233)	8.5
Oil Turpentine, boil. 158–166° C. (sp. gr. 0.857)	16.1
Cumol, boil. up to 160° C. (sp. gr. 0.867)	23.4
Cumol, boil. 150°–160° C. (sp. gr. 0.847)	25.
Xylol, boil. 135°–143° C. (sp. gr. 0.866)	25.1
Xylol, boil. 136°–138° C. (sp. gr. 0.864)	22.7
Toluol, boil. 108°–110° C. (spec. gr. 0.866)	26.1
Chloroform	41.3
Benzol	50.3
Ether (Ethyl)	50.8
Acetone, boil. 55.5°–56.5° (sp. gr. 0.797)	378.7
Alcohol (Ethyl), 99.5%	453.6
Amylic Alcohol, boil. 127°–129° (0.813)	495.3
Methylic Alcohol, boil. 65.5°–66.5° (0.978)	1,447.5
Glacial Acetic Acid	1,668.6
Alcohol (Ethyl), 94.5%	2,149.5
Alcohol (Ethyl), 75%	330,000.0

Among these solvents, glacial acetic acid is probably the most efficient and economical for separating paraffin from other petroleum products. Glacial acetic acid is a good solvent for the latter.

1 vol. of	requires of Glacial Acetic Acid, for solution. Vol.
Petroleum, commercial	8–16
(in other cases	25–60)
Petroleum residues	20–25

On the other hand, vaseline, ceresin, ozokerite, and paraffin are almost insoluble in glacial acetic acid. On shaking a mixture of products with a sufficient amount of the acid, the paraffin will remain undissolved.

We quote the above portion of the author's paper, as being of immediate practical value, and will only append another observation attached to the original in a foot-note, viz., that almost all commercial sorts of pretoleum contain paraffin [detected by the solvent above mentioned]; and that, on distilling petroleum, paraffin passes over into the distillate already at 180°–185° C.—After *Ber. d. Deutsch. Chem. Ges.*, 1888, 2,973.

Concentrated Aromatic Waters.

It has long been customary in Europe to prepare and keep on hand so-called Concentrated Aromatic Waters, or more correctly "Essences for preparing Aromatic Waters," for the rapid and extemporaneous preparation of any of the latter, which it may be inconvenient to keep in stock. Such concentrated waters or "essences" are prepared by dissolving the essential oils either in strong alcohol—in which case they should be called "spirits" or "essences," or in a mixture of alcohol and water. Some of these essences, when added to water in a proportion suitable for producing an aromatic water of average pharmacopœial strength, dissolve without causing a cloudiness. Others make a more or less milky liquid, which has to be filtered with the intervention of some absorbent (as carbonate of magnesium, phosphate of calcium, talcum, paper-pulp, etc.), when the mixture in which the water is to be used is required to be clear. In other cases, it may be added without previous filtration.

The following essences are among those given by E. Dieterich in his "Pharm. Manuale," and may serve as examples for the preparation of others.

To prepare an aromatic water from these essences, take

Essence.....10 drops.*
Water.....1 fl. ounce.

1. *Essence for Anise Water.*

Oil of Anise..... 1 part.
Alcohol (90% by vol.) .....9 parts.

2. *Essence for Orange Water.*

Oil of Bitter Orange..... 1 part.
Alcohol (90%).....20 parts.

3. *Essence for Orange Flower Water.*

Oil of Orange Flowers..... 1 part.
Alcohol (90%).....50 parts.

4. *Essence for Camphor Water.*

Camphor.....4 parts.
Alcohol (90%)..... 6 "

5. *Essence for Caraway Water.*

Oil of Caraway..... 1 part.
Alcohol (90%)..... 20 parts.

6. *Essence for Lemon Water.*

Oil of Lemon.....1 part.
Alcohol (90%).....9 parts.

7. *Essence for Creosote Water.*

Creosote.....3 parts.
Alcohol (90%).....7 "

8. *Essence for Lavender Water.*

Oil of Lavender.....1 part.
Alcohol (90%).....9 parts.

9. *Essence for Rosemary Water.*

Oil of Rosemary .....1 part.
Alcohol (90%) .....9 parts.

Upon the same principle, the following essences might be kept on hand to prepare other aromatic waters officinal in the U. S. Ph., for instance:

10. *Essence for Cinnamon Water.*

Oil of Cinnamon.....1 part.
Alcohol.....6 parts.

11. *Essence for Peppermint Water.*

Oil of Peppermint.....1 part.
Alcohol.....9 parts.

12. *Essence for Spearmint Water.*

Oil of Spearmint.....1 part.
Alcohol.....9 parts.

13. *Essence for Rose Water.*

Oil of Rose..... 1 part.
Alcohol.....50 parts.

The Drugs that Live.

The public hospitals, dispensaries, and prisons of Paris are all supplied with drugs through the Pharamacie Centrale. Consequently the records of this establishment show the changes in the amount and kind of drugs that take place in pursuance with the progress or vagaries of modern therapeutics. MM. Bourgoni and Beurmann have studied these records of the past ten years and give some interesting facts derived therefrom. The increase in the use of antiseptics is most striking, as shown in kilograms, as follows:

	1876.	1880.	1885.
Carbolic acid.....	369	2,876	11,217
Corrosive sublimate.....	102	197	314
Iodoform..	22	84	353
Salicylate of soda.....	0	324	353

On the other hand, the following drugs either did not increase, or fell off in amount very much: Salicylic acid, salicylate of bismuth, thymol, and permanganate of potash. As for other drugs, subnitrate of bismuth increased from 347 to 419 kilos.

* Dieterich directs only 3 drops, which we think is much too little.

Quinine increased nearly 50 per cent., but has fallen off of late, while the minor cinchona alkaloids seem to be very much more popular than they are in this country.

The amount of iron sold is on the whole about the same. Of the various preparations the ferro-potassic tartrate and the syrup of the iodide increased in amount, while the chlorides and iodides decreased. Arsenic, in almost all its forms, was dispensed in increasing amounts every year, and is a drug evidently growing in popularity in Paris.

The consumption of purgatives of various kinds was remarkably constant, both absolutely and relatively to each other. Furthermore, the amount varied little from those sold in the previous decades. So that the eleemosynary purgation of Paris seems to take place under certain very definite laws. The favorite purge is castor oil, of which over 3,000 kilos are taken yearly, which is equal to about 180,000 doses. Next in favor comes sulphate of magnesium, of which about 2,500 kilos, or 150,000 doses, are taken yearly. Third in the list is sulphate of sodium, of which the yearly consumption is about 1,500 kilos. Calcined magnesia, rhubarb, purgative salts *en bloc*, manna, senna, aloes, jalap, and scammony follow, croton-oil standing lowest in actual amount.

It would not be far from the truth to say that for the past twenty years the yearly free purgations have averaged half a million; the various salines, castor-oil, aloes, senna, rhubarb, and croton-oil being the chief agents.

Leeching has fallen off about one-half, the number of leeches used in 1876 being 50,650; in 1885, 26,320.

The amount of alcohol consumed increased up to 1880, but since then has decreased. The consumption of caffeine has increased greatly, but not that of tea or coffee.

Relatively the increase of chloroform sold in 1885 was greater than that of ether.

Chloral increased from 351 to 842 kilos; of the three bromides—potassic, sodic, and ammonic—the potassium salt increased most, and the ammonium salt next, while the former is still used vastly more than any other, perhaps because it is cheaper. Opium preparations do not show much change, except that codeine has become very popular, while narceine has fallen into disuse.—*Med. Record.*

Anisic Acid as an Antirheumatic.

Anisic acid is not a new substance in the field of chemistry, but it has not hitherto been used in medicine. Now, however, it is about to be introduced into therapeutics for use in diseases similar to those for which sodium salicylate has been employed. It may be prepared in at least two ways: First, by the oxidation of anise oil or anethol with nitric acid or chromic acid. The reaction is represented as follows:

$$C_6H_4\begin{cases}CCH_3\\CH:CH.CH_3\end{cases} + 2O_2 = C_6H_4\begin{cases}OCH_3 + C_2H_4O_2\\CO_2H\end{cases}$$

Anethol — Anisic acid — Acetic acid.

It is also produced by the oxidation of para-cresol-methyl-ether:

$$C_6H_4\begin{cases}OCH_3\\CH_3.\end{cases}$$

It crystallizes from hot water in needles, and from alcohol in rhombic prisms, melting at 185° C., boiling at 280° C., and subliming undecomposed. Its salts are readily crystallizable and very soluble. The acid will be introduced into commerce chiefly as the sodium and phenol compounds represented as follows:

$C_6H_4\begin{cases}OCH_3\\CO_2Na\end{cases}$ Sodium anisate — $C_6H_4\begin{cases}OCH_3\\CO_2C_6H_5\end{cases}$ Phenol anisate.

The latter melts at 75° or 76° C. Therapeutically, it will, as already indicated, be introduced as an antirheumatic, antineuralgic, etc. Curci recommends it to be given in the same doses as sodium salicylate. It is said to be well tolerated, to be equal in medicinal virtue to the salicylate mentioned, but destitute of the sometimes unpleasant effects of the latter.—*Chem. and Drugg.*

Oils of Lavender and Rosemary.

In order to cover the unpleasant smell of denaturalized alcohol, the German Government has permitted the addition of oil of lavender or rosemary, which must previously be submitted to the examination of chemical experts. No official tests being prescribed by Government, Mr. H. Eckenroth recommends the following tests:

1. Lavender oil. It should be colorless or very slightly yellow, and have a specific gravity of 0.885 to 0.895. It must be miscible with 90 per cent alcohol in any proportion. 10 C.c. of the oil and 10 C.c. of alcohol of 0.895 sp. gr. should give a turbid mixture, whereas the mixture with 30 C.c. should be clear. 5 C.c. of the oil, shaken with a few grains of magenta, should remain uncolored. 90 per cent of the oil must distil below 210° C. 2. Rosemary oil, The oil must be colorless or slightly yellow. 10 C.c. of it, mixed with 15 C.c. of 90 per cent alcohol, should give a clear solution. 5 C.c., shaken with a few grains of magenta. should remain uncolored. 90 per cent of the oil must distil below 175° C.—*Chem. Zeit.* and *Journ. S. Chem. Ind.*

A Safe Antiseptic Solution.

DR. EMIL ROTTER, in the *Centralblatt f. Chirurgie*, some time ago again drew attention to the fact that a combination of different antiseptics is more powerful (or at least appears to be so) than any single one. He also proposed a compound antiseptic, which he claims to be very powerful, and yet not toxic to any dangerous extent. The principles upon which it was combined were the following: It should should contain no poisonous agent in sufficient quantity to cause harm, if absorbed; it should be non-irritating, and easy to keep; it should be clear and free from odor; it should mix clear with ordinary water; and it should be so compounded that the essential constituents could be carried in form of powder or pastille.

The following was the result of his experiments:

	Gm.	Grains.
Corrosive Sublimate	0.05	1
Chloride Sodium	0.25	5
Carbolic Acid	2.00	30
Chloride Zinc	5.00	75
"Carbolate" Zinc	5.00	75
Boric Acid	3.00	45
Salicylic Acid	0.60	10
Thymol	0.10	2
Citric Acid	0.10	2
Water.....to make 1,000,000; about 137 pints.		

This solution was tested both in the laboratory and in surgical cases. In the laboratory, it was found to have a more potent effect on pyogenic microbes than corrosive sublimate in solutions of 1 in 1,000.

Note on Phenacetin.

FROM a recent circular on phenacetin we take the following salient features:

Phenacetin, or para-acet-phenetidin, having the composition:

$$C_6H_4 \begin{cases} OC_2H_5 \\ NH\,(CO.CH_3) \end{cases}$$

is a whitish, lustrous, crystalline powder, tasteless, almost insoluble in water, more easily soluble in glycerin, and readily in alcohol. It melts at 135° C., and the determination of its melting point affords a sure criterion of its purity.

During February, 1887, Prof. Kast and Dr. Hinsberg pointed out that this body was an efficient antipyretic, and this was subsequently confirmed by others. According to Dr. L. Heusner, the effects may be summarized as follows:

A dose of 1 Gm. (15 grains) of phenacetin produced in a febrile adult an energetic reduction of the temperature of the body lasting from eight to ten hours. One gramme of phenacetin has the same effect upon the temperature as ½ gramme (7½ grains) of antifebrin, or 2 grammes (30 grains) of antipyrin. Doses of 1.5 grammes (22 grains) of quinine fell far short of the effect produced by these several remedies. Most patients to whom phenacetin has been administered experience a comfortable rest and inclination to sleep.

Owing to the fact that phenacetin does not produce any secondary effects, it may also be employed as an antipyretic in children, in doses of about 0.2 to 0.4 Gm. (3 to 6 grains).

Recently it has been found that phenacetin, in doses of 1 to 2 Gm. (15 to 30 grains), which may even be repeated several times daily, is a very efficient antineuralgic, acting rather slowly (after one or two hours), but surely.

The Merim Tree.

MR. JAMES W. WELLS, the well-known author of the work "Three Thousand Miles through Brazil,"* gives an account of a remarkable tree which he met on the route from Carolina, on the Rio Tocantins, to Chapada, on the Rio Grahaju. His account is as follows:

"We had spread our rugs for the morning picnic under the grateful shade of a large tree standing alone on the green slopes of the stream, and noticing that it was a stranger to my experiences (the author is a very fair botanist), I hacked off a piece of its very thick, hard, corrugated bark, and immediately a very volatile sap issued from the gash, and the piece in my hand appeared saturated with it as though it had been dipped into kerosene; its odor was very similar, and in the fire it proved equally inflammable. I took away several pieces, and some days afterwards the odor had changed to the delicate *perfume of violets*. I could only find that the tree is known as *Merim* (an Indian diminutive name applied to anything), although this tree was anything but small, for its lower branches were about twenty feet from the ground, and its trunk nearly five feet in circumference; its leaves were small and pinnate, and of a dark, dull-green color. The thermometer registered 83° in the shade of this tree."

In a foot-note, the author remarks: "This tree may possibly be the *sapucainha* (*Carpotroche brasiliensis*), which gives an excellent oil of a peculiar and very agreeable odor, and which must not be confounded with another *sapucainha* (*Mayna brasiliensis*) of Velloso)."

*Exploring and Travelling Three Thousand Miles through Brazil from Rio de Janeiro to Maranham. 2 vols., 8vo., London, 1886. The above extract is from Vol. II., 248.

Solution of Albuminate of Iron.

THE Pharmacopœia Committee of the German Pharmaceutical Association proposes the following text for *Liquor Ferri Albuminati*.

Dissolve 30 parts of dry albumen in 1,000 parts of lukewarm water, strain, and pour the liquid into a mixture of 120 parts of solution of chloride of iron (Germ. Pharm., spec. grav. 1.280–1.283, equal to 10% metallic iron) and 1,000 parts of lukewarm water. To cause the separation of the iron albuminate, very dilute solution of soda is to be added in drops, if necessary, until the liquid is exactly neutral. Allow the precipitate to settle, then decant the supernatant liquid, wash the precipitate repeatedly with luke-warm water, collect it upon a moistened cloth strainer, and allow it to drain. Then transfer it to a porcelain capsule, add a mixture of 5 parts of soda solution (10%) and 50 parts of water, and promote solution by stirring. Next add 250 parts of cinnamon water (Germ. Ph.), 100 parts of alcohol (sp. gr. 0.830–0.834), and 50 parts of brandy, and dilute with enough water to make the whole weigh 1,000 parts.

The product is a clear, or but faintly turbid, reddish-brown liquid, of a scarcely perceptible alkaline reaction, tasting of cinnamon and faintly of iron, and containing about four parts of iron in 1,000 parts. Addition of solution of chloride of sodium or of hydrochloric acid precipitate it; ammonia does not affect it, and alcohol may be mixed with it without separation. On diluting the solution with water (1 in 20), it should not be rendered blue by ferrocyanide of potassium, nor should tannic acid impart to it a dark color.

From the Commentary attached to this formula by the Committee, the following portions will be of special interest to those who make or use the preparation in this country.

The preparation of albuminate of iron requires certain precautions, if a perfect product is to be obtained. It is necessary to guard against the access of chloride of sodium and still more so against that of carbonic acid. The following are the principal points which must be paid attention to. The water used for dissolving the albumen and for dilution of the iron solution must be lukewarm, but not above 50° C. In order to exclude every trace of carbonic acid, it is best to use water which has been boiled, and allowed to cool out of contact with air. The precipitated iron-albuminate must also be washed with water freed from carbonic acid. The washing itself must be continued until all the chlorine has been removed. Since the albuminate of iron will only separate when the liquid is exactly neutralized, the addition of a small amount of soda is usually necessary. It may, however, occur that the precipitate appears without the addition of soda; that is, the liquid may have attained the neutral point without it. At all events, great care is to be used not to add the slightest excess of soda, since this would exert a solvent action upon the precipitate. Hence the soda solution used for neutralizing must be very dilute (say 1 or ½%), though still reacting with very *delicate litmus paper*. Such litmus paper may be prepared by impregnating fine white "post" paper with a not too concentrated aqueous infusion of litmus, to which enough dilute nitric acid had been carefully added to change its color to violet, that is, intermediate between blue and red. When dry, the paper will have a pale-violet hue and will be rendered blue or red by the least trace of alkali or acid, respectively. The washed precipitate must be dissolved, without delay, in the prescribed quantity of soda solution. The whole process must be carried out quickly, at all events inside of one day, as the precipitate is liable to become less soluble by long standing. It will not do to press the precipitate upon the strainer, simple draining is required. Of the greatest importance is the quantity, quality, and mode of addition of the soda used for dissolving the precipitate. The smallest possible quantity of soda, which will effect solution, produces the clearest product. Any excess of soda will decompose the albuminate more or less, and will render it less soluble. Hence the soda must be added very dilute, and not in portions, but all at once, being immediately mixed with the precipitate by quickly stirring. The solution of soda must be as free as possible from carbonic acid and comply with all the pharmacopœial tests. In place of the dry, fresh albumen may be taken. But as the latter varies in its percentage of water, the proper quantity must be determined by experiment. Usually 75 parts of fresh albumen yield 10 parts of dry. The latter is easily prepared by passing fresh albumen through loosely woven gauze, and exposing it in thin layers, upon flat plates, either to sun-light, or to artificial (moderate) heat in a warm room, until it peels off the plate.—After *Pharm. Post.*

Sulphonal.—Dr. J. Fraenkel having stated in the *Berliner Klinische Wochenschrift* that he had found Riedel's sulphonal inferior to that of Bayer and that his patients had refused to take it, owing to the bitter taste which persisted long after the tablets had been swallowed. Dr. Herman Hager made a number of careful comparisons and neither he nor his assistants could discover any grounds for Dr. Fraenkel's unfavorable opinion of Riedel's sulphonal nor any perceptible difference between the two products when subjected to physiological or chemical tests.

Filicic Acid.

MALE-FERN contains several proximate principles, one of which is known to be the chief—if not sole—bearer of its therapeutic properties. This is the substance which usually deposits, in form of a crystalline precipitate, in oleoresin of male-fern on standing. As this is known to be essential to the activity of the oleoresin, the U. S. Pharmacopœia expressly directs the deposit to be well mixed with the liquid portion, before any of it is dispensed.

If filicic acid is the only active constituent of male-fern, it will probably not be long before it is prepared and used in its pure state. To accomplish this, the process mentioned by G. Daccomo, in his recent paper on the subject of filicic acid (in *Ber. d. Deutsch. Chem. Ges.*, 1888, 2,962), will be found serviceable. This process was first published by the author in 1887, in *Annali di Chim. e Farmacologia*, ser. IV., Vol. VI.

Mix the ethereal extract or oleoresin of male-fern with a mixture of 2 vol. of alcohol of 95% and 1 vol. of ether, and shake it thoroughly with it. The liquid will dissolve nearly everything but the filicic acid, which is left behind, in an impure state, in form of a brown, resinous, insoluble mass. This is subsequently washed with the same mixture of alcohol and ether. Next it is boiled with a little ether in a flask provided with an upright condenser, and the ether occasionally renewed, until it no longer acquires a green color. Finally, there remains a yellowish residue, which, after several recrystallizations from ether, acquires a constant melting point, viz., 179–180° C. The ether used for purifying the filicic acid can be made to yield a little more of the latter by evaporation and treatment with alcohol and ether, as before.

Thus prepared, filicic acid is a shining, pale-yellowish, crystalline powder, composed of microscopic, rhombic scales, having the melting point 179–180° C. (uncorrected). When heated over 100° C., it acquires a golden-yellow color, but resumes its original tint on cooling. It is tasteless, insoluble in water, almost insoluble in absolute alcohol, quite soluble in glacial acetic acid, ether, amylic alcohol, and toluol, crystallizing well from the three last-named solvents. It is also easily soluble in chloroform, carbon disulphide, and benzol.

Daccomo finds it to have the composition $C_{14}H_{16}O_5$, which appears to be supported by his further researches into its ultimate constitution. The latter are at present only of theoretical interest, and therefore passed over by us.

Variations in the Price of Quinine.

THE *National Druggist* gives the following tabulated statement of the price of an ounce of sulphate of quinine in this country since 1823.

Year.	Highest Price.	Lowest Price.	Year.	Highest Price.	Lowest Price.	Year.	Highest Price.	Lowest Price.
1823.	$20 00	$16 00	1845..	$2 40	$2 35	1867..	$2 20	$1 95
1824.	14 00	12 00	1846..	2 40	2 20	1868..	2 35	1 90
1825.	8 00	8 00	1847..	2 40	2 30	1869 .	2 30	2 00
1826.	7 00	5 25	1848..	2 70	2 60	1870..	2 30	2 10
1827.	7 50	6 00	1849..	3 65	2 95	1871..	2 45	2 20
1828.	6 00	3 25	1850..	3 70	3 70	1872..	2 45	2 40
1829.	2 90	2 25	1851..	3 25	3 25	1873..	2 55	2 45
1830.	2 50	1 75	1852..	3 00	2 80	1874..	2 50	2 20
1831.	1 50	1 35	1853..	3 20	2 70	1875..	2 30	2 15
1832.	2 00	1 75	1854..	2 50	2 50	1876..	2 70	2 20
1833.	1 87	1 70	1855..	3 00	2 60	1877..	4 50	2 70
1834.	1 80	1 25	1856..	2 60	2 40	1878..	3 60	3 40
1835.	1 65	1 60	1857..	2 00	1 40	1879..	3 60	2 60
1836.	1 58	1 45	1858..	1 40	1 25	1880..	3 25	2 25
1837.	1 40	1 40	1859..	1 50	1 25	1881..	3 25	1 90
1838.	1 90	1 60	1860..	1 80	1 20	1882..	2 50	1 80
1839.	3 30	2 75	1861..	2 10	1 80	1883..	1 80	1 60
1840.	3 12	2 87	1862..	2 90	2 25	1884..	1 80	90
1841.	2 62	2 50	1863..	3 25	2 70	1885..	1 05	75
1842.	2 00	1 60	1864..	2 75	2 60	1886..	80	65
1843.	1 80	1 55	1865..	3 40	2 20	1887..	70	46
1844.	3 00	2 00	1866..	2 60	2 25	1888..	56	50

Preventing Bumping during Boiling.

IN a short paper on "Bumping Ebullition" (*Chem. News*, Nov. 16th), Charles Tomlinson says:

"I have already said that these porous nuclei [for instance, capillary tubes] act by force of their capillarity, and so powerful is this force alone that it can be applied in a variety of ways. Even a short bundle of fine capillary tubes, united, like a faggot, by a thread in the middle, is an active nucleus in liberating vapor. Such a bundle, weighing only 10 grains, put into a retort, from which methylated spirit was being distilled, raised the amount of distillate in the ratio of 100 to 110.

"A Russian chemist has found that charcoal acts only for a short time in preventing bumping. This may be the case with ordinary wood charcoal, but it is not so with well-prepared *boxwood charcoal*, or still better with *cocoanut-shell charcoal*, which will continue active for hours and even days, making the boiling easy, and increasing the amount of the distillate. For example, methylated spirit, boiling at 171° F., distilled in a glass retort, gave 244 grains in five minutes; but when three or four fragments of boxwood and cocoanut charcoal, weighing together 20 grains, were added, the distillate, in five minutes, weighed 325 grains, or as 100 to 133.2."

Embalming Liquid.

ACCORDING to Leufen, the following is a good mixture:

Arsenious Acid	20 parts.
Bichloride of Mercury	30 "
Alcohol	200 "
Carbolic Acid Water (5%)	3,250 "

The quantity required in the case of adults is 5 to 6 quarts. The liquid is injected, by means of a strong syringe, into the carotid artery, or the aorta, or the main arteries of the several parts of the body, until a few fine needle-pricks into the ends of the fingers and toes show that the whole body has been charged with the liquid.—*Berl. Med. Centr. Zeit.*, 1888, 575.

The Bleaching of Tincture of Litmus.

IT is well known that tincture of litmus gradually loses its color when it is kept in tightly closed bottles. For this reason it is usual to stopper the litmus bottle with a pellet of cotton, or with a perforated cork through which a bent glass tube passes, or merely to invert a glass-cap over the open neck of the bottle. The cause of the bleaching has recently been made the subject of an investigation by Dubois. According to him, tincture of litmus possesses a perfect fauna and flora, consisting of infusoria, zoospores, algæ, fungi, and other micrococci. The author examined three separate samples of the same tincture of litmus, each contained in a separate vessel. One of these was sterilized by mercuric chloride, another by heat, while the third was not sterilized. It was found that the sterilized samples retained their blue color completely. The other sample gradually lost its tint, and finally contained only a living, very small, globular micrococcus. The decolorization of tincture of litmus, in closed vessels, is therefore due to the presence of micro-organisms, which, when deprived of the access of air, cause a reduction of the blue coloring matter to a leuco- (or colorless) compound. If the latter is again oxidized, its blue color is restored.—*Bull. Soc. Chim.* and *Pharm. Post.*

Wine from Currants.

U. S. CONSUL E. HANCOCK, at Patras, Greece, reports as follows on the industry of making wine from currants, which is assuming enormous proportions in France, owing to the great destruction of vines by the phylloxera.

The process of wine-making from dried currants is exceedingly simply. The fruit is emptied out of the barrels or sacks in which it arrives into large wooden tubs, of a capacity of several tons, and twice or thrice (according to the quality and strength of wine which it is intended to produce) the amount of water is added. During cold weather it is necessary to artificially heat the water to an average summer temperature, otherwise the fermentation would be too long delayed, but under ordinary circumstances the fermentation has taken place, and the liquid is ready to be strained in a period from eight to ten days. When this last operation has taken place, the liquid is ready for immediate use, and can in no way be distinguished from ordinary light wines; it is of a light-ruby color, and possesses a strength, according to the amount of water that has been added, of from 9 to 13 degrees. Wholesale dealers usually sell it at so much per degree of alcoholic strength. It is also employed for the manufacture of superior brands of wine, and this is done by the admixture of strong and colored Spanish, Italian, and Dalmatian wines, and by various other processes well known in France. This should not, however, cause any prejudice against similar wines, for they contain nothing deleterious or in any way injurious to the consumer, for the currant in its original state is simply a small stoneless grape, which produces an excellent, strong, fruity-flowered wine; the French, therefore, in adding water to the dried fruit are merely replacing what has been drawn out of it by the action of the sun in the process of drying. Considering how much spurious wine is put on the market nowadays, I think one has reason to congratulate himself, if he can be perfectly certain he is drinking nothing worse than the liquid produced by the admixture of currants with water. Currants are likewise consumed to a great extent during the vintage by farmers and proprietors of vineyards in France, who produce ordinary qualities of wine and who, owing to the remunerative prices paid for their wines, are anxious to increase their product as much as possible. Experience has shown them that if currants, with the usual proportion of water, are mixed during the vintage with the fresh grapes and allowed to ferment together, the blending is much superior to that obtained by mixing a currant wine to a natural wine, and the liquid obtained has all and every attribute of a pure, natural wine. The most careful chemical analyses have declared this, and it is, therefore, not to be wondered at if many wine-growers in France avail themselves of this to make up, in a small way, for the enormous deficit caused by the ravages of the phylloxera, which, if I am not mistaken, has reduced the total French wine production from an average of about 60,000,000 hectoliters of wine to about 30,000,000 annually. I may add that the 40,000 to 50,000 tons of currants annually imported into France, when turned into wine, represent only 1,500,000 hectoliters, so there is plenty of room for the further development of this trade.

Removal of Ammonium Salts from Sulphuric Acid.

In determining nitrogen by means of Kjeldahl's method — conversion of the nitrogen compound into ammonia— it is necessary to employ sulphuric acid absolutely free from salts of ammonium. This may be accomplished, according to Meldola and Moritz, by warming the acid with nitrite of potassium, about 0.05 Gm. of the latter being required for every 100 C.c. of the acid. The warming must be continued for about two and a half hours. Any ammonia present is thereby decomposed into nitrogen and water, and the excess of nitrous acid is all dissipated. The reaction which takes place is the following:

$$\underset{\text{ammonia}}{NH_3} + \underset{\text{nitrous acid}}{NO.OH} = \underset{\text{nitrogen}}{N_2} + \underset{\text{water}}{H_2O}$$

—*Dingl. Pol. Jour.*

Succinimide of Mercury.

This new mercurial has the formula, $C_2H_4 \begin{Bmatrix} CO \\ CO \end{Bmatrix} NH$. and may be formed by heating together succinic acid, carbonic anhydride, and ammonia. It furnishes with mercuric oxide a compound which occurs as a white silky powder, soluble in water. This solution remains quite unchanged when kept. Dr. Vollert publishes some account of the agent in the *Therapeut. Monatshefte.* He prepared a solution of 1.3 grammes of the mercuric salt in 100 of water, and used it in a large number of cases in the form of a hypodermic injection. He found that its action was satisfactory, free from pain and from undesirable secondary symptoms. Over some similar compounds it exhibits the advantages of giving a permanent solution which may be kept without decomposition for weeks. Moreover, it is cheap ; it contains about half its weight of mercury in a combined condition.—*Chem. and Drugg.*

Detection of Acetanilide.

According to D. Vitali (*Chem. Centralbl.*), acetanilide (antefebrin) cannot be at once detected in the urine of people who had consumed this compound. This is shown by the fact that urine, either in its original state or neutralized with ammonia, was extracted with five times its volume of ether, when the ethereal solution gave no residue. Acetanilide gives the following color reactions: A trace of it gives a blue coloration with a few drops of a solution of bleaching powder and a crystal of phenol. Mixed with a solution of potassium chlorate in sulphuric acid, it produces a red color, which is changed to yellow by water, by heating to blood red. With a crystal of potassium nitrite and a drop of concentrated hydrochloric acid, acetanilide produces a yellow color, which, on heating, changes through green to blue. On evaporation to dryness, an orange-colored residue remains, which is colored red by ammonia.

Determination of Alcohol.

The following abstract of a paper by B. Röse, on the above subject, published in the *Zeitsch. f. angew. Chem.*, is taken from the *Journ. Chem. Soc.*

An excess of potassium permanganate oxidizes alcohol completely to carbonic acid and water when to the mixture so much concentrated sulphuric acid is added that it amounts to 40 per cent of the whole. The author's experiments were made with absolute alcohol distilled from quicklime in an apparatus from which moist air was excluded. It boiled at 78.26° C. (corr.). From this, a 1-per-cent solution was made with purified water. The permanganate solution contained 10 Gm. in a liter, and was standardized by potassium quadroxalate, a decinormal solution of which is also required. The analytical process is as follows:

About 5 Gm. of the dilute alcohol is weighed in a flask; 50 C.c. of the permanganate is run in, and then 20 C.c. of water is added, then a measured excess of the oxalate, the liquid heated nearly to boiling, and the excess of the oxalate found by permanganate. In four experiments, 100.18, 100.0, 100.24 and 100.0 per cent of the alcohol present was indicated.

New Test for Chloral or Chloroform.

A new test for either chloral or chloroform, which is said to exceed every other in delicacy, has been based by C. Schwarz upon the previously announced color reaction of chloroform with resorcin and potassa.

If a solution of resorcin is heated to boiling with chloral hydrate or chloroform, in presence of an *excess* of caustic soda, a red coloring matter is produced even if only the least traces of chloral or chloroform are present. This color disappears on supersaturating with acid, and reappears on addition of alkali.

On the other hand, if chloral hydrate (0.1 Gm.) or chloform are heated to a brisk boil with an *excess* of resorcin (0.3 Gm.), and only a *little* soda solution (3 C.c. of water and 3 drops of 10% soda solution), a yellowish-red liquid is produced which shows a magnificent yellowish-green fluorescence even in the greatest dilution. The red coloring matter appears to be rosolate of sodium, while the fluorescence is due to the formation of fluoresceine. The author has obtained this color reaction with as little as 1 C.c. of a solution of 0.1 Gm. of chloral hydrate in 1 liter of water (that is, with 0.0001 Gm. or about $\frac{1}{616}$ grain of chloral hydrate), if the following method of procedure was adopted: In 1 C.c of the solution just mentioned, 0.05 Gm. of resorcin were dissolved, then 5 drops of 10% soda solution added, and the whole heated to brisk boiling.

On applying this test directly to the urine of persons who have taken chloral, it was found that the color required for its appearance a protracted boiling and a considerable excess of alkali (for the decomposition of urochloralic acid). Colorless solutions may at once be subjected to the test with resorcin and soda. Colored ones, however, such as red wine, liquorice mixtures, etc., must first be decolorized.—*Zeitsch. f. anal. Chem.*, 1888, 668.

Reduction of Iodates to Iodides.

A very simple method for accomplishing the reduction of iodates to iodides—also of bromates to bromides and chlorates to chlorides—has been discovered by H. N. Morse and W. M. Burton. The agent by means of which the change is brought about is zinc amalgam, rich in zinc, prepared by shaking zinc dust with mercury in presence of tartaric acid, and washing with water.

The solution of the iodide containing iodate is boiled with the zinc amalgam, when the iodate is reduced, oxide of zinc being formed.

Experiments with pure iodate showed that quantities of 1 to 2 Gm. in 50 C.c. of water were completely reduced in 45 to 75 minutes, respectively.

Bromates and chlorates are also reduced by the same reagent, but with successively increased difficulty.—After *Am. Chem. Journ.*

The Constitution of Milk.

At the meeting of the French Academy of Sciences, of November 12th, M. Béchamp, of the Lille Free Faculty, presented an important memoir on the constitution of milk. Owing to the lateness of the hour, he was only allowed to give a brief outline of the results arrived at, the memoir being reserved for publication in the *Comptes Rendus.* M. Béchamp is convinced that in milk the fat-globules are not suspended as in a mechanical emulsion, but held in separate cells possessing a distinct pellicle. This is clearly proved by separating the cells and isolating the teguments, which he exhibited on a paper filter. To effect this he removed the casein with sesquicarbonate of ammonia, and gathered the fat-cells on a filter, where they were thoroughly washed and dried. Next, with a gentle heat, the fatty matter was melted out, and the cell epidermoids remained on the filter. The pellicles could easily be freed from all fat and examined. That they do not consist of casein is proved by the fact that they are soluble in alkalies, even caustic potash. The professor also held that casein is not coagulated by heat when freed from its combination with milk albumen, and it is to the latter substance that coagulation is due when it does occur.—*Chem. and Drugg.*

Resorcin as a Test for Nitrates.

David Lindo, who has already pointed out the usefulness of other phenols for the detection of nitrates, finds that resorcin is a very delicate reagent.

1. *Reagents required.*—An aqueous solution of resorcin, 100 C.c. containing 10 grammes of the phenol.

Solution of hydrochloric acid, about 15 per cent.

Pure concentrated sulphuric acid.

0.5 C.c. of nitrate solution, taken for each test. 1 drop of hydrochloric acid, 1 drop resorcin solution, and 2 C.c. sulphuric acid. Test-tubes $\frac{5}{8}$ inch in diameter. White background. Three or four tests made together at each dilution of nitrate.

N_2O_5 dilution.	Reaction.
1,000,000.	Faint purple, not sufficiently definite to be reliable, even after long standing.
500,000.	After some time a definite purple. Color permanent.
100,000.	At first purple-red; after an hour pronounced purple. Takes several hours to develop fully. A beautiful color and very permanent.
50,000.	After some time purple color very intense. Lower portion of band fine purple-red.
20,000.	After some time color so intense that it can only be distinctly seen in the upper portion of band by transmitted light.
10,000.	Color so intense can only be seen distinctly in the lower portion of band. Vivid purple-red.

Remarks.—Without hydrochloric acid, resorcin is not of the least value as a test for nitrates; with the addition of the acid, it is perhaps one of the best reagents we possess for the purpose. It is fully five times more delicate than carbolic acid, and the final purple color which the bands acquire is very permanent. The blank tests with distilled water, hydrochloric acid, etc., show a faint compound band, pink above, yellow below; this cannot possibly be mistaken for the definite purple band which the test gives with N_2O_5, even at a dilution of 500,000. One drop copper solution (two per cent sulphate) added to the test was found to increase the intensity of the band, but not to a very remarkable extent; the metal may therefore be dispensed with when this phenol is employed.—After *Chem. News*, Oct. 12th.

Drug Culture in British India.

In his annual report on the Nilgiri Government Botanical Gardens, Mr. Lawson, the director of the gardens, refers to the following exotic medicinal plants which are now being grown experimentally in the gardens.

Ipecacuanha.—There are in stock altogether about 4,000 plants, 500 of which were planted out last year at Nilambur; out of these 500 three only have died, while the rest are vigorous growing plants, although they have been tapped and the leaves stripped off them no less than three times during the last nine months. About 2,000 well-rooted plants will be distributed, free of cost to planters, during the present season; the remainder will be removed for increasing still further the stock in hand. The reports on the growth of some few specimens, which were put out in the Wynaad last year, are most encouraging.

Jalap.—Between five or six thousand tubers, of all sizes, have been put down in the medicinal garden at Dodalietta, besides several thousands of cuttings; but it is not expected that any appreciable crop will be harvested before the winter of 1889 or 1890.

Medicinal Rhubarb.—Plants have been put down in the garden at Coimbatore, and others will be planted out shortly in the new garden at Gùdalùr.—*Chem. and Drugg.*

Naphthol is recommended by Dr. Ruault, of the French Laryngological Society, as an agent for removing the odor of ozena, and diminishing the discharge. The nasal passages are to be washed out three or four times daily with a large spoonful of equal parts of borate and bicarbonate of soda dissolved in a pint of water to which is added, just before use, a teaspoonful of 12 parts of naphthol in 84 parts of 90% alcohol.—*Deutsche Med. Woch.*, Oct. 25th, 1888.

Meco-narceine is reported by Dr. Laborde (*Bull. de l'Acad. de Méd.*, 1888, No. 19) to be a new alkaloid discovered by him, in conjunction with Dr. Duquesnel, in opium. He claims that it produces quiet sleep, only slight contraction of pupils, slight anæsthesia, no headache, and no disturbance of the digestive organs.

Alum is recommended by Dr. Wickstrand, of Stockholm, as the best remedy for whooping-cough. A teaspoonful of a 2-per-cent solution is to be taken from four to six times daily.—*Centralbl. f. klin. Med.*, Nov. 17th, 1888.

China Grass is recommended by Huveison as the source of a soft, silky, highly absorbent fibre used for various manufacturing purposes, and particularly well adapted for antiseptic dressings.

Cascara Sagrada.—Dr. John Irving (*Brit. Med. Jour.*, Sept. 22d, 1888) remarks that the addition of water to the liquid extract of cascara of the British Pharmacopœia makes a muddy and rather repulsive-looking draught, but that the addition of a very small quantity of ammonia water renders it clear and of a bright ruby red by transmitted light. Other drugs may be mixed with it, provided the mixture is made alkaline by means of ammonia. Associated with iron, cascara prevents the constipating effect of that drug. Dr. Irving recommends the following formula:

Citrate of Iron and Ammonium	30 grains.
Ammonia Water	10 minims.
Liquid Extract of Cascara Sagrada	½ to 1 drachm.
Solution of Saccharin (5 per cent)	enough to sweeten.
An Aromatic Water	to 6 ounces.

An ounce to be taken three times a day.

Remedy for Tape-Worm.—Bernard Persh recommends: Croton Oil, gtt. i.; Chloroform, ʒ i.; Glycerin, ʒ i. To be taken in the morning, fasting, and without preliminary preparations. It is not disagreeable to take, and operates promptly.

Ointment for Acne.—Resorcin, 45 to 75 grains; Powdered Starch and Oxide of Zinc, of each 75 grains; Petrolatum, 225 grains. This ointment is to be applied at bedtime, and removed in the morning, with the aid of olive oil and cotton wadding. It never causes irritation, and improvement appears within three days.

Resins used by Ancient Egyptians.—A small jar of resin was recently submitted to Mr. E. M. Holmes for identification, it having been disinterred from a heap of rubbish found among the ruins of Naucratis, and dates from the sixth century, B.C. Naucratis was at this time the only Greek colony in Egypt, and it was through this town alone that trade with Greece was permitted. Mr. Holmes states that the jar contained Chian turpentine. According to Flückiger, there is no evidence that the old Egyptians were acquainted with the resin, and this discovery carries the history of the commerce of the drug two hundred years further back. Another resin was found on a mummy cloth on the body of a person of apparent rank. It was found in Hawara Cemetery, in the Fayum province of Lower Egypt, and dates from a period not earlier than the second century, A.D. Examination seemed to indicate that it must be a Siamese benzoin. The authors of "Pharmacographia" state that there is no evidence that Greek, Roman, or even early Arabian physicians had any acquaintance with benzoin.—*Phar. Jour.*

"Pomade Hongroise" for the moustache.—Vomacka's formula is: 100 parts each of powdered gum arabic and powdered soap; 200 parts distilled water; To be made into a smooth paste. In another vessel mix by melting, 20 parts of spermaceti; 200 parts of yellow wax; 300 parts of distilled water. Bring the first mixture nearly to boiling and mix the two thoroughly. While still hot add 20 parts of glycerin, and add any oil chosen for perfume, drop by drop, with constant stirring.—*Nat. Drugg.*, from *Rundschau* (*Prag*).

Potter's Perfect Antiseptic.—Corrosive sublimate, 5; chloride of sodium, 25; carbolic acid, 200; chloride of zinc, sulpho-carbolate of zinc, each 500; boric acid, 300; salicylic acid, 60; thymol, citric acid, each 10; water 10,000 parts. This is the author's "strong solution." Another and weaker is made by omitting the sublimate and carbolic acid. The solution is limpid, transparent, and does not affect steel instruments. He claims that it is free from the toxic properties of antiseptic fluids in common use.—*Nat. Drugg.*

"Warner's Safe Kidney Cure."—According to the information furnished to the German government and verified by the report of D. F. Homayer, of Frankfurt a. M., a government chemist, each bottle contains: Extract of Lycopus Virginiana (the herb), 308 grains; Extract of Hepatica (the herb), 232 grains; Extract of Gaultheria, 7½ grains; Potassium nitrate, 39 grains; Alcohol (90%), 2 5/15 ounces: Glycerin, 10 drachms. The balance is water.

Dextrin.—A Russian writer gives the following directions for making a superior quality: Mix 400 parts of potato starch with 200 parts of water and 5 parts of hydrochloric acid (s.g. 1.14) and allow it to dry. This takes about two days. Then heat gently in a water-bath for a half-hour, after which direct heat may be applied and the temperature raised to 230° F. The product is almost completely soluble in water and possesses great adhesiveness.

Chloroform perfumed with oil of cloves is said by Prof. Nussbaum to be free from liability to cause nausea when used as an anæsthetic.

Solution of Citrate of Magnesium should never be exposed to strong sunlight, as its effervescing property will be destroyed, especially when it contains much sugar.—*Br. and Col. Dr.*

Vernonin is a glucoside obtained from *Vernonia nigritiana*. It is derived from an alcoholic extract of the resin as a white, slightly hygroscopic powder, slightly soluble in ether or chloroform. Solutions are pale yellow and leave a colorless and resinous deposit which, with sulphuric acid, gives a brown color changing to violet-purple. It is reported to be a powerful cardiac poison.

Remedy for Erysipelas.—Carl Paulá, Schwimmer, and Gayza Faludi recommend the following application to erysipelas:

Carbolic acid	ʒ ss.
Olive oil	ʒ i.
Precipitated chalk	q.s.

Make into a soft paste.—*Med. News.*

Lactic Acid.—Dr. Rajin, of Lyons, France, has good results from the application of an 80% solution of the acid to tuberculous ulceration and lupus. He admits the claim of Mosteg that the acid appears to destroy morbid but not healthy tissue. The application may be made twice daily. Progress is not rapid, but successful in the four cases reported.—*Boston Med. and Surg. Jour.*

Nitroglycerin.—Dr. Lautenbach, of the Pennsylvania Eye and Ear Infirmary, finds it of value in cases of tinnitus aurium accompanying cardiac lesions, and when there is little or no loss of hearing. Two doses daily of one one-hundredth of a grain each are usually sufficient, but six doses have been given. Usually improvement follows speedily, but in long-standing cases one to three months may be required.—*Med. Times.*

Thalline Tartrate.—Gillebert de Hercoutt employed this in 40 cases of gonorrhœa in solution with naphthol 1 in 50 and 1 in 100; administering three injections daily. Pain diminished during micturition on the second day, and the discharge disappeared between the fourth and sixth day. It is only useful in the commencement of the disease, and fails in cases of long duration.—*Br. Med. Jour.*

Saccharin in France.—French authorities have so persistently denounced saccharin that it is surprising that those who are interested in it have not been more energetic in refuting the French statements. Certainly, there is every evidence that assertion has been greater in quantity than proof. The strongest objection which French authorities have urged against saccharin is that it cannot replace sugar as food, "because it passes through the economy and is eliminated by the urine without being assimilated or transformed." This does not appear to be a very strong reason for prohibiting the sale of saccharin in France; nevertheless, such is the case, and Portugal has recently followed suit.—*Chem. and Drugg.*

Creosote directed to be put into gelatin capsules should, according to Groh, of Vienna, be first combined with powdered cacao-butter, as it renders the capsule more stable and is better borne by the stomach.

Face Powders.—H. W. Snow, in the *New Idea*, reports the following analyses:

Freeman's "Veloutine," a powder consisting of magnesium carbonate, an insoluble silicate (French chalk), zinc oxide in considerable quantities, and bismuth subcarbonate in small amount.

Lotos' Face Powder consists of magnesium carbonate, zinc oxide, corn starch, and an insoluble silicate (talc or soapstone).

Ricksecker's Face Powder, wholly a natural, insoluble silicate, which does not have the appearance of French chalk, and is not talc.

Fellow's White Rose, chiefly French chalk, with about 25 to 30 per cent zinc oxide, perfumed with small amounts of orris root.

Eastman's Aloha Face Powder.—About equal parts zinc oxide, calcium carbonate, and starch colored with carmine, and slightly perfumed with orris.

Pinaud's Face Powder.—Zinc oxide, talc, and small quantities of starch perfumed with oil of rose.

Pinaud's Rice Powder.—Contains no powdered rice, but is composed essentially of zinc oxide, talc, corn starch, and at least one other starch, possibly from orris root.

Piesse and Lubin's Pistachio Nut Face Powder.—A fine quality of talc, elegantly perfumed, and colored slightly with a lavender tint.

Rimmel's Face Powder.—Zinc oxide, magnesia, talc, corn starch, with a vanilla perfume, probably coumarin and vanillin.

Rosaline, used to give a red tint to the nails and lips, consists of eosin, 10 parts; white wax, 30 parts; spermaceti, 30 parts; and petrolatum, 410 parts.

White-wood may be stained to resemble cedar by boiling it in a solution of 200 parts of catechu and 100 parts of caustic soda in 1,000 parts of water.

An Elegant Preparation for the Bath, it is said, may be made by thoroughly powdering and mixing 1 part of borax, 1 part of sal soda and 2 parts of salt. Alcoholic solution of oil of eucalyptus may be used to give it an odor.

Celluloid may be mended, it is said, by wetting the edges with glacial acetic acid and pressing them together for a short time.

Powdered Rosin is so liable to spontaneous combustion that Hager advises that it should be kept in tightly closed tin boxes.

Cocaine in Solution with Borax causes a precipitate, but this can be prevented by the presence of a small quantity of glycerin. When once formed the addition of the glycerin will not cause it to be redissolved. Mulberry syrup is said to have a similar effect.

Roache's Embrocation is said to consist of 2½ parts of asafœtida, digested in 60 parts of olive oil. After standing some hours it is decanted, and the solution mixed with 2 parts each of oil of caraway and turpentine and a few drops of oil of wintergreen.

Antipyrine, according to Dr. H. C. Wood, is a more successful remedy for chorea than arsenic. With the latter the average duration of treatment is 60 to 90 days. With antipyrine he has succeeded in completely arresting convulsive movements within one week.

Rhus Aromatica, the fragrant sumach of the United States, is recommended by several French doctors as a valuable remedy in cases of incontinence of urine; in atonic condition of the bladder and its sphincter. Children, 2 to 6 years old, may take 10 drops night and morning, and other children 15 drops for a dose. The tonic effect of the medicine does not always persist, but the trouble is liable to return when its use is suspended. It may be given in simple elixir.

A Drug on the Market.—The Madras Government has so much difficulty in disposing of its cinchona febrifuge (the mixed alkaloids) that it is suggested that the drug be distributed to the postmasters for sale, or given away to the poor, through the dispensaries and minor officials in malarial districts. The latter recommendation has been adopted.—*Phila. Med. Times.*

Carbonized Sawdust, saturated with certain chemical compounds, has been introduced as a material for filtering or decolorizing liquids. When the object is to remove sulphate of calcium, the chemical used is chloride of barium; for carbonate of calcium, sulphate of magnesium, and caustic soda. Sawdust intended specially for decolorization of liquids is first treated with alum and then with carbonate of sodium. This causes a precipitation of hydrate of aluminium which adheres to the sawdust. The sawdust is then washed until the wash-water does not react with chloride of barium.—*Pharm. Jour.* from *Pharm. Centralh.*, Oct. 25th.

The After-taste of Salicylates is said to be prevented by placing a small quantity of ordinary table-salt upon the tongue just before the dose of medicine is taken.

Liniment for Neuralgia.—*L'Union Médicale* gives the following formula:

Tinct. Camphor	90 parts.
Ether	30 "
Tinct. Opium	6 "
Chloroform	20 "

Apply with flannel covered with an impervious material.

Creosote.—According to Dr. J. Rosenthal (*Berlin. Klin. Woch.*), the best vehicle for creosote is carbonic acid water containing brandy. He prescribes it in bottles containing 5½, 10½, and 16 ounces. The smallest bottles contain from 1½ to 3 minims of creosote and 75 minims of brandy; the next largest, 6 minims of creosote and ʒ iiss. of brandy, and the largest size 9 minims of creosote and ʒ iiiss. of brandy. During the first week the patient is to take one of the smallest bottles after dinner and supper each day; during the second week, half a bottle of the next stronger water after breakfast and dinner, and a weaker bottle after supper, and so on, gradually increasing the size of the dose until a maximum of 12½ minims a day is reached.

Glycerin.—Enemata and suppositories, made with 10 per cent of stearin or a hard castile soap (as mentioned in our issue for December, 1888), have been reported upon, at considerable length, in the *Medical News* for Dec. 8th, by Dr. J. P. C. Griffith, of Philadelphia, Pa. The results of experience demonstrate the opinion expressed by us that it appears to be one of the most prompt and efficient laxatives in existence, and pharmacists will do well to give the subject of the manufacture of these suppositories immediate attention.

Antipyrine.—Dr. T. H. Ross, of Buffalo, N. Y., reports a case of distention of the breast in a woman attempting to wean a child, in which 8 grains of antipyrine given thrice daily put a stop to the pain and within three days arrested the secretion of milk.—*Med. News*, Dec. 8th.

It is reported that the use of antipyrine blackens the teeth and most quickly affects those which have lost their enamel. The discoloration is only temporary and is quickly removed by oxygenated water.

Nitrous Oxide with Oxygen as Anæsthetic.—According to the *Centralbl f. gesammte Med.*, experiments have been made in Germany on the anæsthetic effect of a mixture of four-fifths of nitrous oxide and one-fifth of oxygen, particularly in gynæcology. The gas has been difficult to procure in a portable and convenient form, but the author of the paper alluded to—Swiecicki—says the mixture may be now obtained in London in the compressed condition, and very convenient for use.—*Chem. and Drugg.*

Correction in National Formulary.—In formula 241, Liquor Zinci et Ferri Compositus, read: "Diluted Hypophosphorous Acid," instead of "Hypophosphorous Acid." The preparation under No. 3, in the same work, is, of course, meant.

The British Pharmacopœia.—About the middle of last November, the third reprint of the British Pharmacopœia of 1885 was issued from the press. The second reprint appeared in October 1886. The original edition was of 20,000, and the reprint of 1886 of 6,000 copies. All of these have yielded to the General Medical Council a profit of 1,200*l.* So far as we know, the new reprint does not contain any other new features than the insertion of the synonyms "paregoric" and "paregoric elixir" under "Tinctura Opii Comphorata," and that of "laudanum" under "Tinctura Opii." The British pharmaceutical press appears to doubt the wisdom of this. For hereafter it will be an infringement of the law to sell as "paregoric" or as "laudanum" any other than the officinal preparations. In the case of laudanum, of which one or more "weaker" kinds were generally kept in stock for sale over the counter (for domestic or veterinary use), this will make a material difference.

Alpha-oxynaphthoic Acid as Antiseptic.—According to Magerstein, the antiseptic effect of alpha-oxynaphthoic acid is about five times as great as that of salicylic acid. The special purpose for which the experiments with this substance were undertaken was to ascertain its power of arresting, or preventing, fermentation. While 1 liter of a solution of grape sugar requires between 0.3 and 0.4 Gm. (5 to 7 grains) of salicylic acid, only 0.07 to 0.11 Gm. (about 1 to 2 grains) of alpha-oxynaphthoic acid are needed for the same purpose.

Salicylate of Mercury ($C_7H_4O_3Hg$) is recommended by Dr. Aurojo, of Rio Janeiro, as a preparation producing rapid effects and suitable for either internal or external use. It is a white, amorphous, odorless and tasteless powder, neutral and nearly insoluble in water or alcohol. It is fairly soluble in a watery solution of common salt, a hot saturated solution becoming gelatinous on cooling. This jelly dissolves at ordinary temperatures upon the addition of more water. Mineral acids decompose the salt, but acetic, tartaric, lactic, and carbonic acids do not.

New Chemical Laboratory at Cornell.—$80,000 has been appropriated for building a chemical laboratory for Cornell University at Ithaca, N. Y.

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EDITORIAL

A VERY praiseworthy, new departure is about to be inaugurated by the well-known Chicago wholesale drug-house of Morrison, Plummer & Co. It will be remembered that, at the late meeting of the American Pharmaceutical Association at Detroit, the Commercial Section passed a resolution to the effect, that manufacturers be asked to label their products, as far as possible, in accordance with the official nomenclature, to abandon unscientific and arbitrary standards, such as degrees of Baumé, "ff" marks, etc., and to express strength by figures representing specific gravity or percentage of active constituent. The firm above mentioned now announces, in *Western Druggist*, that it has adopted the above recommendation of the Association, and that it will comply with it hereafter.

We congratulate the firm on their wise resolution, and trust that it will not be long before others will follow the good example. A few manufactures, it is true, have followed this principle for years, but they are the exception, and their products are generally above the usual commercial standards, not only in quality, but also in price. The vast majority of manufacturers and of wholesale dealers in drugs and chemicals has, up to the present time, usually adhered to the old-fashioned methods.

We have for years maintained, and are more convinced than ever, that any house which will bestow the proper care upon the labels which it attaches to its products, so as to make these labels not only *commercially useful* and *correct*, but also *instructive* beyond the purely commercial aspect, will quickly feel the results in a largely increased trade. There seems to be an unwillingness, on the part of large manufacturers and dealers, to depart from long established customs. Some of these houses are so very conservative, that they even pay but little attention to the periodical changes in pharmacopœial standards, expecting that the Pharmacopœia Committees should rather fix the standards in accordance with the strength and quality of the products put by them on the market, than that their products should be accommodated and adjusted to the standards established by the Pharmacopœia. It must be said, however, that after the appearance of the *last* Pharmacopœia, manufacturers and dealers have much more readily and speedily modified their products so as to comply with the new official standards. This was chiefly brought about by the enactment of laws, regarding the purity of food and drugs in various States, and by the public prosecution of a number of firms who had disregarded these laws.

We mention these matters merely as an illustration of the ultra-conservative spirit of the class of persons under discussion. Let the reader pick up the price-list of some manufacturer or wholesale dealer, and examine it carefully. He will, in the majority of cases—there are some very notable exceptions—find the list distinguished by various mistakes, misspellings, mis-derivations, etc., and in many cases he will be unable to tell just of what quality or strength an article may be. For instance, he will look for *aconitine*, and he will, perhaps, find a single line: "Aconitine, pure," with a price attached. On receiving a vial of it, the label will perhaps convey no further information than the price-list, and, unless he already knows something of the history of aconitine, he may remain ignorant of the risk he runs by not possessing the precise information as to the source of the alkaloid or the maker's name, which, in a case of *this* kind, stands equivalent to a quotation of the process employed. Had the vial been properly labelled, "Aconitine, cryst., Duquesnel," or "Aconitine, amorph., Merck," or "Aconitine, cryst., Gehe & Co.," etc., etc., the purchaser would obtain the very information which is absolutely necessary for him to possess. Examples of this kind might be quoted *ad infinitum*.

Certain designations, such as: "Acetic Acid, No. 8," "Ammonia, 16°," "Ammonia, f f f," "Sulphuric Acid, 66°," "Nitric Acid, 38°," etc., etc., have a commercial and conventional meaning, it is true, but they do not convey the information which, in these days of progress, we have a right to expect. The merchant may be compelled to retain these arbitrary standards, which are perhaps the only ones which many of his old customers understand. But this should not prevent him from catering to the wishes of the newer generation likewise. A single label may contain the information suitable for both. And a label of this kind can often be made very instructive, and may save the purchaser much extra time and labor. Sufficient latitude may be given to the expressions of strength, to allow for any reasonable fluctuations in different batches of one and the same product. For instance, instead of: "Acetic Acid, No. 8," a label like the following would be desirable:

ACETIC ACID.

So-called No. 8. Spec. grav. about 1.040 at 59° F. Contains about 29% of absolute Acetic Acid.

Instead of having a label "Phosphoric Acid, syrupy," or the like, something like the following is preferable:

PHOSPHORIC ACID.

Syrupy Tribasic (or Orthophosphoric) Acid, made from phosphorus. Spec. grav. about 1.700 at 59° F. Contains about 85% of absolute tribasic Phosphoric Acid (H_3PO_4).

Since all commercial syrupy phosphoric acid corresponds to this standard pretty closely, the information conveyed by the label will enable the purchaser to calculate, at once, and without hunting up tables of specific gravity and percentage in books, how much acid he will have to weigh out to make a definite quantity, say of a 50-per-cent or of a 10 per-cent phosphoric acid. It only requires the time to get up such a label *once*, and in consequence of it, the time of *every one* of the purchasers, who does not need to search through works of reference, is saved *each time* that he handles the bottle. The above examples will be sufficient to show how the plan could be carried out.

When products turned out by a firm are intended to be, as near as possible, always of uniform quality, it will be an easy matter to devise labels, after the pattern above suggested, to be used in place of the present barren ones. A firm which is willing to vouch for its products, and which actually controls and tests their purity and strength, need have no hesitation in adopting the new plan, for it is merely giving to the purchaser the figures which their own responsible analysts or assayers have verified.

IN what manner the new law about to be drafted by the State Excise Commission, for the regulation of the liquor traffic in this State, will affect the pharmacists engaged in business, should it be passed by the Legislature, cannot as yet be determined. But there can be no doubt that the

whole pharmaceutical profession of this State is most decidedly opposed to any attempt which would put them on a par with liquor-sellers pure and simple. At the same time it is certain that the profession, as a whole, would repudiate any member who should put himself on a par with a retail liquor-dealer by retailing liquors over his counter. We have watched the proceedings of the State Commission, which has now been in session for some time, with considerable interest, and believe that it has thoroughly examined the whole subject, though we apprehend that it has not always arrived at the correct results. If we are not mistaken, one of the clauses of the new law is proposed to contain a proviso that hereafter no one but a citizen of the United States shall be granted a license to sell liquor. Now, while we do not yield to anybody in patriotic feeling, and in deference and respect for the honor of American citizenship, we must say that in our opinion such a proviso as that above alluded to is not worth the paper it is written on. Citizenship is indeed an indispensable condition for many occupations, or for the exercise of certain rights, but, on examination, it will be found that all these cases have a more or less direct connection with the Government, the State, or minor political complexes, and none at all with purely personal pursuits. Thus the right to hold public office, the right to vote, the exercise of jury duty, the right to own landed property, and many other rights and privileges, may rightfully and justly be made dependent upon the possession of citizenship by the person concerned in the matter. It is easy to discover in all of these cases a connecting link between the individual and the body politic, which makes it desirable, or rather necessary, that the individual should be known as a supporter of the constitution upon which the body politic is founded. But, on the other hand, citizenship cannot be made a condition for permitting the individual to be born, to make his living, or to die. It can have nothing to do with the right of the individual to engage in business, plain and unalloyed with governmental or political relations, for the sake of making a living. A few months ago the Board of Aldermen of the City of New York attempted to pass an ordinance aimed at the thousands of Italian fruit-venders throughout the city, forbidding the granting of permits for fruit-stands to any but citizens of the United States. The legal adviser of the city very clearly and forcibly showed the unconstitutionality of this law, and it was thereupon amended so as to eliminate the objectionable section. The Board of Aldermen might just as well have passed additional ordinances forbidding any but citizens of the United States to receive licenses as peddlers, truckmen, drivers, etc. Were this kind of legislation admissible, it would not be long before it would be applied as a "protective" measure and to shut out all competition to every kind of business, whether it is carried on under a license or not. The consequence would be that there would finally remain no walk of life—except, perhaps, the lowest class of manual labor—in which a newly-arrived person could make his living, no matter how well trained he may be in a profession or trade, until he had resided in the country long enough to become a citizen. He would be like the boy who was told that he might learn to swim, but who was not allowed to go in the water.

Now, if the law to be proposed by the State Commission should contain such a clause, it will become of interest how this part of the law, taken in connection with the other sections, will affect the interests of pharmacists engaged in business, or proposing to do so. Personally we could wish that they were all citizens; but, actually, we know of quite a number who are not, most of them because they have not been in the country long enough; a smaller number from various other causes. If the new law throws pharmacists and liquor dealers together, the section about citizenship might apply to both, and its enforcement will create trouble and annoyance for some members of the profession. It is, therefore, advisable to watch the proposed legislation carefully, so that no attempt can be made to consummate the blunder.

It is not improbable that the Commission will reconsider their action on this point, and eliminate the objectional feature from the proposed law. Perhaps this has already been done, though we have not seen it reported. The passage of the unwarrantable section can do no good, being not even able to afford a guarantee that "citizen liquor-dealers" will be more respectable and law-abiding than "alien liquor-dealers." Nay, it will only jeopardize any good that may be derived from the execution of the remaining sections of the law.

CREOLIN, the new proprietary antiseptic, which has received indorsements from Prof. Esmarch and other well-known authorities as to its efficacy and power (we hope that the indorsers will not have reason to repent), is alread yon the market in several brands. Besides the original Simon-pure, of Jeyes (or Pearson & Co.), there is one made and sold by A. Artmann, of Brunswick, Germany, which is advertised as being "identical with Jeyes' creolin, but free from the strong tarry odor of the latter, to be non-poisonous, not caustic, and free from carbolic acid, etc." The representatives of the genuine article take every opportunity of informing the public that the "imitation" is worthless. R. Otto some time ago published a notice regarding Artmann's creolin in the *Pharm. Centralhalle*, in which he states that this is made from the heavy fractions of coal-tar, boiling between 180°–220° C., by first distilling off the carbolic acid, and then converting the remainder into compounds with alkalies. Otto thinks that Artmann's product is preferable to the English. When mixed with water, it produces a strongly milky, faintly alkaline liquid, resembling an emulsion. [Since Otto's paper was published, Artmann has made use of Otto's report in a manner which induced the latter to publicly denounce the unauthorized use of his name.] Artmann's creolin occurs as a thickish, dark-brown, perfectly clear liquid, having an odor less disagreeable than the English product, with a spec. grav. of 1.100 at 70° C. It is soluble in alcohol, in all proportions, to a liquid free from fluorescence. On incineration it leaves 3.3% of ash, consisting chiefly of sodium sulphate, chloride, and carbonate. The milkiness which is caused by the addition of water is due to substances which may be separated from the emulsion by ether or benzol. It is not possible to dissolve them out from the creolin itself by means of these solvents. Addition of hydrochloric or sulphuric acid, and also of solution of soda, causes the milkiness of the watery emulsion to disappear. Otto states that the creolin under discussion contains about 50 per cent of phenols; also 2 per cent of carbonate of sodium.

A cursory examination of a sample of Jeyes' Creolin by one of us shows this to have a slightly alkaline reaction (about the same as that above described). It is soluble to a clear liquid in alcohol, ether, benzol, etc., and forms with water a milky emulsion; the color of it becomes the whiter the more dilute it is. This aqueous emulsion is, however, *not* cleared up by hydrochloric or sulphuric acid, nor by caustic soda. If Otto's statement about Artmann's creolin in this respect is correct, the behavior of the aqueous emulsion to the above-mentioned acids and alkali would afford one method of distinguishing the genuine from the imitation. The spec. grav. of the genuine was found to be 1.082 at 55° F.

According to Crismer, creolin undergoes a more or less extensive decomposition when heated in a retort. At first a little water passes over, but between 115° and 120° C. considerable quantities of hydrosulphuric acid gas are generated. The sulphur appears to exist in the creolin in combination with carbon, and not in the form of sulphates, sulphides, or phenol-sulpho-acids.

THE new and simple process by means of which the amorphous bases, extracted along with the chief alkaloid from coca leaves, can be converted into pure, crystallizable cocaine, is likely to revolutionize the whole cocaine industry. Prof. C. Liebermann and Dr. F. Giesel announced, some time ago, that they had successfully accomplished this, and an abstract of their latest communication, containing the details of their process, will be found on page 4 of this number. We learn from the authors' paper that they have patented their process. But we do not believe that the patent can be controlled, as the process does not require either any special apparatus, or any special intermediary agent or patented ingredient. Moreover, the patentee has no means of knowing whether any

cocaine sold by a manufacturer has been obtained natually or artifically. A patent which cannot be controlled is worse than useless. It is like "a shadowy fence around a spectral fortress."

If the process of converting the hitherto useless and rejected amorphous bases into pure cocaine is as easy as the authors describe, manufacturers will no longer have any excuse for putting on the market any product from coca except the pure, crystallized alkaloid cocaine and its salts. Most manufacturers have heretofore, of their own accord, only sold the pure alkaloid and its salts, and have put aside the amorphous bases as waste by-products. These latter will no doubt now be rapidly worked up and put on the market in form of cocaine. In consequence thereof, the price of cocaine, which is already so low as to leave but little profit to the maker, will probably fall still lower, and eventually the manufacture of cocaine will be concentrated in fewer hands than at present.

THE manufacturers of sulfonal, of whom there are at present four, have issued a circular in which they announce that, to insure the purity of their product, they will hereafter subject all their output to the control of two scientific experts. At the same time they announce that they have settled upon a uniform price. We cannot help believing that the essential part of this "combine" is the "regulation of the price." The "scientific control" is a very good thing, no doubt, but we have heretofore not heard of any bad lots of sulfonal being turned out by the manufacturers, and are inclined to believe that the *signature* of the experts, as a sort of trade mark upon the labels, is considered of more importance than any scientific examination of the substance itself.

PAPER-PULP has for some time been employed, to a limited extent, in pharmacy, having been recommended by James Ruan, in 1874, in the manufacture of medicated waters. A recent paper by J. G. Falk, read before the Missouri Pharmaceutical Association, furnishes suggestions for its more extended use, and leads us to inquire whether wood-pulp, so extensively used in manufacture of paper, and already employed for antiseptic surgical dressings, might not be treated so as to fit it for pharmaceutical uses. If this can be accomplished, the labor of converting it into paper, and then reducing it to a pulp, would be avoided, and a considerable item of expense be done away with.

THE *Canada Lancet*, in its issue for October, p. 63, says that Dr. Bull, of Glasgow, recommends *iodized fennel* as a remedy in uterine affections. Will the editor of the *Lancet* kindly furnish us with a description of this decidedly novel substance?

Michigan Pharmaceutical Association.—The officers for the ensuing year are: President, George Gundrum, Ionia; Vice-Presidents, F. M. Alsdorf, Lansing; H. M. Dean, Niles, and O. Eberbach, Ann Arbor; Secretary, H. J. Brown, Ann Arbor; Treasurer, William Dupont, Detroit. Executive Committee, A. Lymann, Manistee; A. Bassett, Detroit; F. J. Wurzburg, Grand Rapids; W. A. Hall, Greenville, and E. T. Webb, Jackson.

The Antipyrine Craze in Paris.—A correspondent to the *Virginia Medical Monthly* says that the extent to which antipyrine is employed in Paris is incredible. The average French doctor prescribes it for all the ills that flesh is heir to; it has become as necessary an article in every lady's boudoir as her perfume bottle; scarcely a man can be found who has not some of it carefully stored away in his pocket-book; children are raised on it, and cry for it as for their *biberons;* and, in fact, they all take it, and for all things, but especially for *migraine*, which, as you know, is pre-eminently the malady of those who indulge in social dissipation. "That you may form an idea of the extent to which it is the rage, I will give you an incident as it was told me by the party immediately concerned: Mrs. P—— was dining out recently in the Faubourg St. Germain, when she chanced to mention that she had suffered with headache during the day. Instantly, from the pockets of thirteen of the fifteen guests who were present, antipyrine was produced—in capsules, wafers, powders, and elixirs—and she was compelled to take a dose then and there, notwithstanding her earnest protest and her assurance of entire relief before starting from home.

CORRESPONDENCE.

Assay Scheme for Bismuth Ores.

Editor American Druggist.

DEAR SIR:—On page 217 November number AM. DRUGGIST, I gave your readers a simple test for some of the ores of bismuth in the form of making a coating of bismuth iod on charcoal. The assay for bismuth seems to be a bugbear to the majority of pharmacists. It seems to me it would be well for all pharmacists to acquaint themselves with the study of so-called inorganic chemistry. Through this region a Ph. G. that does not understand estimation of minerals will lose a great deal as far as a monetary consideration is concerned. Now, as to our scheme for bismuth assay, we proceed as follows:—Take of ore (finely pulverized) 10 grammes, borax glass powd. 30 grammes, sodium bicarb. 10, kalium cyanide (pot. cy.) 6 grammes, salt to cover; put in medium size crucible, fuse in moderate furnace fire, and test the resulting metallic button as follows:

Dissolve button in boiling HNO_3 (filter out other metals such as tin, gold, antimony, etc.). Evaporate to nearly dryness on porcelain dish; to expel nitrous acid fumes add about 4 C.c. HCl. Heat three minutes over alcohol lamp, then put in beaker containing about one liter water; add of water q.s. to precipitate bismuth oxychloride. Let stand 12 hours, decant and filter, put precipitate in small capsule and burn to expel chlorine and form bismuth oxide. Now estimate, as in similar operation, to get percentage of the pure metal in the bismuth ox.—about 89%. If this is of any use, give it to your readers. Next time will describe process for estimation of tin, copper, etc. Yours truly,

G. H. HERBERT.

BEAVER, UTAH, Nov. 22d, '88.

San Francisco Meeting of the A. P. A.

Editor American Druggist.

DEAR SIR:—In the last issue of the *National Druggist* (Dec. 15th), an announcement was made concerning the S. F. Meeting of the A. P. A. which I fear may prove misleading to the members and others who contemplate making the trip to California, not only in the dates mentioned, but also in the scheme proposed by Mr. Aglar, Agent U. P. R'y. I respectfully request that you will make the statement that the announcement made was not authorized or approved by the committee, who are now diligently at work upon the subject. When they shall have matured a plan that will meet the views of the members of the Association, and are able to give a through rate at the least possible expense, making the side excursions entirely optional, it will appear over the authority of the committee's signatures. We have been delayed somewhat in our labors by the diversity of opinion concerning the date that should be fixed upon for the meeting, which has now narrowed down to June 24th or July 15th. Members interested are urgently requested to communicate their preference to the undersigned, if possible, before January 10th, 1889. Announcement of the date and plan for the trip to California will be communicated in time to appear in the February issue of the pharmaceutical journals.

Very respectfully,

EMLEN PAINTER,
Chairman Com. on Arrangements,
Broadway and 34th St., New York.

NEW YORK, Dec. 25th.

How to Thaw Frozen Gas-Pipes.

MR. F. H. SHELTON says: "I took off from over the pipe some 4 inches or 5 inches, just a crust of of earth, and then put a couple of bushels of lime in the space, poured water over it, and slaked it, and then put canvas over that, and rocks on the canvas so as to keep the wind from getting underneath. Next morning, on returning there, I found that the frost had been drawn out from the ground for nearly 3 feet. You can appreciate what an advantage that was; for picking through frozen ground, with the thermometer below zero, is no joke. Since then we have tried it several times. It is an excellent plan, if you have time enough to let the lime work. In the daytime, you cannot afford to waste the time, but if you have a spare night in which to work, it is worth while to try it."—*Sci. American.*

Talcum as a Remedy in Diarrhœa.—Deborre recommends talcum in diarrhœa. He gives usually 200 Gm. (about 7 avoirdupois ounces) of very finely powdered talcum in twenty-four hours, sometimes even double the quantity. The talcum is mixed, just previous to its administration, with a sufficient quantity of an aromatic liquid or milk. It does not produce discomfort in the bowels, or nausea, and causes a cessation even of very severe diarrhœa in from two to three days. The remedy is, however, without effect in chronic diarrhœa, prevalent in the tropics, or in that form which is caused by tubercular ulceration.—*Pharm. Centralh.*

THE physicians of Alsace-Lorraine have been forbidden to write prescriptions in French. They must use either Latin or German.

QUERIES & ANSWERS.

Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer, for the information of the editor, but not for publication.

No. 2,259.—**Sulphurares** (Boston).

We have never seen this term in English, but believe it is an anglicized form of a term not long ago introduced by Louis Olivier, to designate certain organisms occurring only in sulphuretted waters, such as *leptothrix*, *bacillus zoogléens*, etc. These contain sulphur, which undergoes certain transformations (see *Comptes rend.*, 106, 1806). The author calls these organisms "sulfuraires."

No. 2,260.—**Eau de Melisse des Carmes** (W. J. B., N. Y.).

The original receipt for preparing this celebrated liquor was published by Chevalier some seventy years ago in his *Manuel du Pharmacien*, and attention has recently been drawn to this by Mr. Languepin in an article in the *Bulletin de la Société de Pharmacie de Bordeaux* (reprinted in the *Répertoire de Pharmacie*, Oct., 1888). As it is not likely that it would be a profitable undertaking for any of our readers to make use of that formula, we content ourselves by referring our correspondent to the above-named journals, which he may consult in the library of the New York College of Pharmacy.

No. 2,261.—**Listerine** ("Acacia").

This is a proprietary article, the composition of which is given as follows by some of our references:

Boric Acid	240 grains
Benzoic Acid	120 "
Borax	120 "
Thymol	40 "
Oil of Eucalyptus	10 drops
Oil of Wintergreen	10 "
Oil of Peppermint	6 "
Oil of Thyme	2 "
Alcohol	7 fl. oz.
Water	enough to make 32 fl. oz.

There have been other formulæ published, but the difference is not material.

No. 2,262.—**Prescription Query** (Supplement to No. 2,250.

In our last volume, page 220, we answered a query, in which we were asked how the following prescription is to be dispensed:

℞ Potassii Chloratis	ʒ iiss.
Quininæ Sulphatis	gr. xl.
Syr. Pruni Virg.	ss.
Syrupi	q. s. ad ℥ i.
Aquæ	q. s. ad ℥ iv.

Regarding this, we have received the following communication from Mr. M. Van Every, of Buffalo, N. Y.:

"In regard to prescription query No. 2,250, I would recommend the following mode of procedure: Add the syrups and q. s. water to make three and one-half ounces. Heat to about 212° F., and then dissolve the chlorate of potassium. Allow to cool, and add water q. s. to make four ounces, thereby forming a super-saturated solution. Then transfer to a mortar, and thoroughly incorporate the sulphate of quinine. The syrups will hold quinine in suspension."

No. 2,263.—**Ascertaining the Level of Liquids in Casks, Tanks** (Charleston).

We have a letter from a correspondent who is bothered with a problem which we scarcely expected to be put before us for advice and solution, as it is so simple. Nevertheless, after having received our correspondent's letter, we concluded to make a few experiments with some friends of ours, to see in what manner they would solve it. And as the most simple way only occurred to *one* of them, and only after having exhausted all other resources, we have concluded to answer our correspondent's query publicly.

The trouble under which our correspondent labored is this, that he has a number of tanks in his cellar, situated on a high platform, and connected with a water-supply, for a purpose which it is not necessary to mention here. The tanks are all closed, having merely an air-vent. None of them have any gauges to show the height of the liquid, the usual custom having been to turn on the water-supply of each tank when it gave a hollow sound on "percussion" to near the bottom, and to turn it off again when water would issue from the air-vent. The tanks are so situated that a gauge or measuring-rod cannot be dropped into them. Now the question was asked, how he may determine the exact level of the contained water at any time, without relying on the uncertainty of percussion. Our advice is as follows: Select a glass-tube of about the same bore as the faucet at the bottom of the tank, and connect it, by means of a piece of rubber tubing, with the faucet. Hold or fasten the glass-tube in an upright position, best in contact with the tank, and then open the faucet. The water will, of course, rise in the glass-tube to the same level as it is in the tank. Then make a mark upon the tank.

No. 2,264.—**Apparatus for Microphotography** (W. S. S.)

If you will consult some of the leading dealers in optical and photographic apparatus, we have no doubt that you will be put on the track of what you are looking for.

We would, however, advise besides that you communicate with the well-known optical institute of Carl Zeiss, in Jena, Germany, as this firm has recently perfected this kind of apparatus very materially. A detailed description of their large-size microphotographic apparatus has recently been published in the *Zeitschrift für Instrumentenkunde* (Sept., 1888), which you may consult in the library of the N. Y. College of Pharmacy. The Scoville Manufacturing Co. and Anthony, of New York, both advertise appliances for microphotography and you may there be able to find what you require without going abroad.

No. 2,265.—**Prescription Query** (A.).

The following prescription has been sent to us, with a request to state how it should be dispensed:

℞ Sapon. Viridis	4 Gm.
Ol. Cadini	100 "
Glycerit. Amyli	100 "

Our correspondent said he rubbed the oil with the soap and added the mixture gradually to the glycerol in a mortar, with constant trituration. But this failed to make a homogeneous mass.

We regret to inform our friend that we have not been any more successful than himself. The fact is, that the oil of cade and the glycerite of starch cannot be made to combine or mix, without the intervention of some other substances, such as alkalies, which it would, however, be improper to add, without the prescriber's knowledge. If the latter can be consulted with, we would suggest that he be advised, either to substitute some other vehicle for the glycerite of starch, or to permit the addition of a small quantity of caustic soda, sufficient to saponify so much of the oil of cade as is capable of saponification. A simple trial will show how much is required.

No. 2,266.—**Hydroxylamine** (Baltimore).

We have explained the chemical constitution and mode of preparation of hydroxylamine and its hydrochlorate on page 219 of our volume for 1887. Briefly it may be regarded as ammonia (NH_3), in which one atom of hydrogen is replaced by hydroxyl (OH), thus:

$$N\begin{Bmatrix} H \\ H \\ H \end{Bmatrix} \text{ ammonia;} \qquad N\begin{Bmatrix} OH \\ H \\ H \end{Bmatrix} \text{ hydroxylamine.}$$

The hydrochlorate of hydroxylamine, which is the salt generally employed, has the composition $NH_2.OH.HCl$. Hydroxylamine is not known in the free state, but only in form of salts.

Last year it was stated (see AM. DRUGG., 1888, 106) that the hydrochlorate of hydroxylamine, which had been found a very efficient reducing agent in photography, would probably be found serviceable in dermatological practice for the same purposes as pyrogallic acid and chrysarobin. Prof. C. Binz has recently published results of experiments made on animals which seem to confirm this. At the same time it was found that the substance, when injected hypodermically, is an energetic poison, affecting particularly the oxyhæmoglobin of the blood and the nerve centres.

No. 2,267.—**Preservation of Solutions which deteriorate by Contact with Air** ("Analyst").

Our correspondent specially refers to test solutions, such as ferrous sulphate, which rapidly absorbs oxygen from the air, or such as caustic soda, caustic potassa, which take up carbonic acid. He states that he is compelled, for certain purposes, to keep on hand and to constantly use a solution of ferrous sulphate, as free from ferric as possible.

We assume that our correspondent is still a learner rather than an accomplished "analyst." But we will gladly help him out, as far as we are able.

If our correspondent is *compelled* to keep such a solution as he mentions, on hand for constant use, we would advise him to prepare it either by dissolving pure crystals of sulphate of iron in distilled water previously deprived of air by boiling, or by dissolving fine iron wire in boiling dilute sulphuric acid, leaving any remaining residue in the flask and using the latter itself as reservoir of the solution. A layer of light paraffin oil may then be poured on top to prevent contact with air. The solution may be drawn off by means of a siphon permanently fixed in the neck, and the outlet from the siphon protected by a pinch-cock. The exit of the siphon tube may be kept immersed in a little mercury when not in use. There are various other ways in which the same object may be attained. The chief points are: Free the liquid from air before

adding the sulphate of iron. In the case of metallic iron and dilute sulphuric acid, this is not so necessary, as no ferric salt will form while an evolution of hydrogen gas takes place; yet it is better to heat the acid to boiling and to add the iron gradually.

In place of sulphate of iron, the ammonio-ferrous sulphate (green ammonio-sulphate of iron) may be used. This is much less liable to oxidize than the simple sulphate. If the use of the solution is not interfered with by an acid, a few drops of sulphuric or better still hypophosphorous (10%) acid will contribute towards the stability of the solution. The plan of keeping a layer of pure kerosene or paraffin oil on the surface, is one which we have followed for a number of years. It will not do in the case of all reagents, but in those mentioned by our correspondent it answers excellently. A very fine material for this purpose is the so-called *Albolene Oil* or liquid albolene, which is a colorless, odorless, and tasteless liquid, of the same nature as liquid vaseline or vaseline oil, and for which McKesson & Robbins, of New York, are the agents.

No. 2,268.—**Coster's Paste** (Detroit).

This is a preparation used in the University College Hospital, London. It has also the title: Pigmentum Iodi et Olei Picis, and is prepared as follows:

Iodine	120 gr.
Light Oil of Wood Tar	1 oz.

Mix carefully, applying heat if necessary; after ebullition preserve for use.

Martindale remarks to this: Ebullition generally takes place by the chemical action between the two ingredients. A part of the oil is oxidized, and forms a resinous deposit. Hydriodic acid is probably formed to some extent, as the mixture fails to give any reaction of free iodine. Similar, but more irritating applications are made by combining iodine with creosote or oil of cade in the above-named proportions.—Coster's paste is a useful application for ringworm of the scalp; after well shaking the bottle, it should be well brushed in with a stiff brush. A scab will be produced which should be removed in a few days, the part cleansed by soaking with oil, and then soap and warm water. After drying, more paste should be applied. It seldom causes pain.

No. 2,269.—**Diluent for Wax** (Dr. L.).

We are asked to mention one or more substances which will mix with wax so as to soften it without rendering it sticky or greasy.

The melting point of yellow beeswax lies between about 143° and 146° F.; that of white wax between about 146° and 150° F. The addition of any substance capable of mixing with wax, and having a lower melting point, will, of course, render it softer. To do this without finally reaching a point when the compound will be greasy, is probably impossible. However, it will depend altogether how far the softening process is to be carried. We would suggest additions of any of the following substances:

1. Paraffin. That having the lowest melting point should be selected. It may be had as low as melting at 100° F.

We should suppose that this would be the most suitable. Paraffin ranges in melting point from about 100° F. to 180° F. It will, of course, be necessary to determine the proper melting point. This may be done roughly by coating the bulb of a thermometer with the paraffin under examination, and immersing the thermometer in water which is gradually being heated under stirring. When the paraffin coat becomes transparent or detached, the temperature is read off. If more accurate results are wanted the coating of the thermometer bulb must be done several days before making the test, as freshly melted or freshly congealed fats do not show the true melting point.

2. Cacao Butter. Perhaps a judicious mixture of this with the preceding might answer. Cacao butter melts at about 93° F.

3. Spermaceti. Melts at about 113° F.

4. Tallow. Melts at about 113° F.

5. Japan Wax, so-called. This is a vegetable fat, melting at about 124° F.

No. 2,270.—**Metabisulphite of Potassium** ("Photo").

We have had several inquiries from correspondents who asked us to explain the nature of the above-mentioned salt, which had been recommended some time ago as an excellent preservative for the pyrogallic-acid developer used in photography. It was only after seeing an abstract of a paper by Prof. Eder, of Vienna, that we were enabled to throw a light on this subject. Prof. Eder committed what we cannot help pronouncing a blunder, by giving to a chemical substance previously known by a certain name an entirely new one. In the reports of Prof. Eder's paper which were first published, the newly-given name only was used, viz.: "metabisulphite" of potassium. When the readers of the photographic journals in which this new salt was recommended went to dealers in chemicals and asked for it, they were—as we have ample reason to know—furnished with the "bisulphite" pure and simple. It was supposed that the new-fangled term "metabisulphite" was merely a fancy name, perhaps introduced by one of the numerous would-be-chemical photographic writers. More recently, however, the confusion has been cleared up. To make the story short, "metabisulphite" is a term applied by Prof. Eder to the salt heretofore known as "pyrosulphite." Though a pyrosulphurous acid is not known in the free state, yet its constitution may be explained or understood easily by recalling the constitution of pyrosulphuric, or fuming, or Nordhausen sulphuric acid.

Pyrosulphuric acid (Nordhausen or fuming sulphuric acid) is obtained by he dry distillation of dried and thoroughly oxidized sulphate of iron. Its composition is $H_2S_2O_7$, and it may be considered as having been formed either by the abstraction of 1 molecule of water from 2 combined molecules of mono-hydrated sulphuric acid, thus:

$$\left.\begin{matrix}H_2SO_4\\H_2SO_4\end{matrix}\right\} \text{ or, } H_4S_2O_8 - H_2O = H_2S_2O_7.$$

or by the solution of 1 mol. anhydrous sulphuric acid (SO_3) in 1 mol. of monohydrated acid:

$$H_2SO_4 + SO_3 = H_2S_2O_7.$$

In the same manner, *pyrosulphurous acid* may be regarded either as being formed by the abstraction of 1 mol. of water from 2 combined mol. of monohydrated sulphurous acid:

$$\left.\begin{matrix}H_2SO_3\\H_2SO_3\end{matrix}\right\} \text{ or, } H_4S_2O_6 - H_2O = H_2S_2O_5$$

or by the solution of 1 mol. of anhydrous sulphurous acid (SO_2) in 1 mol. of monohydrated sulphurous acid:

$$H_2SO_3 + SO_2 = H_2S_2O_5.$$

This acid, as stated above, does not exist in the free state, but only in form of salts. And it is a curious fact that the two atoms of hydrogen can only be replaced by monad elements and not by a dyad, such as Ca, Ba, etc. It is supposed that the two hydrogen atoms are situated asymmetrically in the stereometric molecule (see Meysztowisz in *Zeitsch. f. physik. Chemie*, I., 73).

Now the "metabisulphite of potassium" is really the "pyrosulphite of potassium," $K_2S_2O_5$. This is prepared by completely supersaturating a strong solution of sulphite of potassium with sulphurous-acid gas, until the latter ceases to be absorbed. The new compound, $K_2S_2O_5$, is comparatively little soluble in cold water, and separates in hard crystals which, when washed, do not exhale the odor of sulphurous acid, possess an acid reaction, and are permanent in the air. It may be preserved in bottles without changing to sulphate, though when kept several years it may undergo a slight partial decomposition into hyposulphite and sulphate (See *Liebig's Ann.*, 224, 222).

No. 2,271.—**Sterilized Milk** (Several inquirers).

The most practical apparatus for sterilizing milk to be fed to infants was described by Dr. Soxhlet in the *Münchiner Medizinische Wochenschrift*, Nos. 15 and 16, 1886. More recently Dr. Aug. Caillé, before a section of the New York Academy of Medicine (*Dietetic Gazette*, April, 1888), described a somewhat simplified apparatus of the same character, manufactured by C. Riessner & Co., 406 Pearl St., which retails at $4.50, and which has already been rather extensively used in this locality with excellent results.

No. 2,272.—**Liniment** (J. D. J).

The correspondent desires a formula for a liniment capable of relieving pain in the hip following amputation some years since, the pain being paroxysmal in character, having intermissions of about three months, and the paroxysms lasting for six to ten days.

Such pain as is referred to is very apt to come from an inflammation of the nerve in the scar, and we doubt whether any local application in the nature of a liniment will relieve it. We would need rather more detailed information than our correspondent gives to be able to form an opinion of the cause of pain, but will suggest the wearing, constantly, of a covering of india-rubber, gutta-percha, oiled silk, or similar impermeable fabric. This is found to often relieve similar pain; and for the acute paroxysms try the internal use of antipyrin and the application of galvanism. The only liniment we will suggest is the ordinary chloroform liniment, to which aconite may be added.

Note on Atropine.—From a paper by Prof. Ladenburg, of Kiel (in *Berichte*, 1888, 3,065), on the recently-published researches concerning the relationship of hyoscyamine and atropine, in which particular reference is made to Will and Bredig's statement (see AMER. DRUGG., 1888, 213) that atropine is an optically active base, we quote only a portion of the concluding remarks:

"I, therefore, arrive at the same conclusion as I did formerly, viz., that atropine is *optically inactive*, and that it bears a relation towards hyoscyamine analogous to that between uvic acid and lævo-tartaric acid."